The Unesco Courier

A window
open on the world

The Acropolis in peril

TREASURES
OF
WORLD ART

124

Italy

Athena in Rome

The goddess Athena, who according to ancient mythology sprang fully grown and armed from the forehead of Zeus, lord of the gods, gave her name to the Greek capital. She is said to have presented the city with the olive, symbol of prosperity and especially of peace. This terra-cotta bust of Athena wearing her traditional helmet dates from the middle of the 6th century B.C. and was unearthed in Rome. The figure, which bears traces of polychrome paint, was discovered in the foundations of the church of Sant 'Omobono on the site of the former *Forum Boarium* (cattle market) near the Capitol.

Photo © Presses Artistiques, Paris

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ITALY: Roman Athena

Cover

The Acropolis of Athens is in danger. The Greek government is taking urgent steps to preserve and restore these masterpieces of classical Greek architecture and sculpture. This issue of the *Unesco Courier* is devoted to a study of the Acropolis from ancient times to the present day. Cover shows the head of a Caryatid wrapped in a plaster mould (see also back cover and photos, page 10).

Photo Walter Mori © Mondadori, Milan

Photo © Raymond V. Schoder from his book "Ancient Greece from the Air", Thames and Hudson, London, 1974

The Acropolis of Athens, site of one of the world's most famous groups of ancient monuments, rises up in the midst of modern buildings in the Greek capital. Also known as the Holy Rock, the Acropolis takes its name from the Greek words *akros* (upper) and *polis* (city). It was already a centuries-old sanctuary in the 5th century B.C., when the great Athenian statesman Pericles launched the grandiose building programme whose remains are still admired today. Easily identifiable in this rare aerial view (see also page 18) are the Parthenon (large rectangular building in centre); the Erechtheum (left of Parthenon); and the Propylaea and the Temple of Athena Nike (group of buildings at left of photo). Clearly visible at foot of hill are two ancient theatres: the Odeon (left) and the Theatre of Dionysus (right).

During a ceremony held in the Parthenon, Athens, on 10 January 1977, Mr. Amadou-Mahtar M'Bow, Director-General of Unesco, launched an international campaign to save the historic monuments of the Acropolis.

Many of Unesco's Member States have already set an example of international solidarity in responding to this appeal. Equally numerous are those which intend to offer the Greek government—which has decided to assume the costs of the operation—scientific and technical cooperation, especially in combatting the stone disease that afflicts the marble monuments and in ensuring the stability of the rock on which they stand.

by
Charalambos Bouras

How the Acropolis can be saved

CHARALAMBOS BOURAS, *Professor of the History of Architecture at the National Technical University of Athens, is a member of the Greek government's working group on the preservation of the Acropolis monuments. A former architect of the Greek Archeological Service, he has published many articles and books on ancient and medieval Greek monuments.*

THE 40 years which have elapsed between the eve of World War II and the present day constitute a very short period of time in comparison with the age of Athens, but one which has been of great significance for the development and appearance of the city.

As far as the Acropolis itself is concerned, these four decades have passed without any major changes (the large-scale works of restoration undertaken by Nicolas Balanos were completed by 1933), but they have quietly and relentlessly created a series of new problems that confront us today.

These problems, moreover, are so serious that there are those who are now talking of the destruction of the Acropolis, or at least of serious and irreparable deterioration of its masterpieces of classical architecture and sculpture.

The problems are in fact directly related to the rapid and uncontrolled change in the environment surrounding the monuments. The last 40 years have seen enormous economic, demographic and social changes in Athens, converting it from a small peaceful city, full of reminders of its historical past and well-proportioned neo-classical buildings, into a great capital.

In addition to 2 million inhabitants, it has acquired important industries, tall apartment blocks, international ports and airports, together with an increasing amount of environmental disturbance and pollution. Each day increases the alienation of the urban landscape from the natural terrain, the landmarks of classical topography, and the remnants of the buildings of

Photo © Tombazi, Athens

antiquity. The famous crystal-clear atmosphere of Attica is covered with a pall of fumes; while a flood of tourists inundates the city, and the Acropolis in particular.

The Greek Archeological Service has always worked, on a limited scale, to preserve the temples of the Acropolis, but it was only about 10 years ago that specialists became fully aware of the new conditions and problems.

In June 1968, an article in the *Unesco Courier* by Georges Dontas, the Director responsible for the Acropolis, brought the disquiet felt by Greek archeologists to the attention of a wider public. Unesco sent two scientific missions to Athens: a group of three specialists in 1969, and a photogrammetry team from the French National Geographic Institute in the spring of 1971.

The real work of studying and solving the problems of the Acropolis, however, only began in February 1975, with the formation of a committee and a working group of specialists, archeologists and technical experts, and with a generous allocation of funds for the whole operation.

From the outset there has been lively public interest in the fate of the monuments on the Acropolis. The Greeks today look on these buildings as the most precious part of their architectural heritage, while people the world over consider them as the finest expression of the classical spirit of the ancient world.

Both the Greek Government and the authorities responsible for the Acropolis, aware of this general interest and of the responsibility of the scientific community towards the monuments, began to take action in earnest two years ago. At the international level, they appealed for funds to finance the rescue work, while at the national level they organized a thoroughgoing study of the dangers threatening the monuments, in order to eradicate their causes. Here, too, international help was sought, and Unesco sent another team of experts in October 1975.

The problems involved in preserving the Acropolis and its monuments must be exhaustively studied before even the smallest stone is moved from its place. Furthermore, any action must respect three basic principles: the external appearance of the monuments should be changed as little as possible; the internationally recognized provisions of the Charter of Venice should be fully observed (1); and whatever steps are taken should not be irreversible.

The Acropolis rock as a whole was investigated first by geologists and engineers. After exhaustive research, they were able to allay earlier fears that it was unstable or was being eroded by underground water. They also showed that both the natural bedrock and the foundations of the monuments, with the exception of the Pinakothek (the north wing of the Propylaea) and the base of the statue of Agrippa, are in a good state of preservation.

Investigation of the stability of the superstructure of the monuments is now in progress. All these buildings were constructed of blocks of white Pentelic marble, so perfectly hewn and fitted together that no mortar was needed to bind them. Each building is therefore first examined as a whole, to detect fatigue as a result of earthquakes and wind pressure, and secondly in detail, to establish the extent to which its various components (columns, capitals and beams) are capable of supporting a wide range of stresses.

The overall examination of the monuments includes an experimental study of the phenomena affecting the Parthenon, using the modern technique of photoelasticity: a 1:100 scale model made of epoxy resin is subjected to stresses proportionate to those affecting the monument itself.

(1) International Charter for the Conservation and Restoration of Monuments and Sites, adopted at the Second International Congress of Architects and Technicians of Historic Monuments, Venice, 25 - 31 May 1964.

Ballooning to the rescue

Photo © Antiquities Department of the Acropolis, Athens

Balloon approaches the Acropolis (right) on a picture-taking mission. The photos are to help identify the hundreds of pieces of masonry scattered over the site so that those belonging to the surviving monuments may be restored to their original place. Specialists are also studying the surface rock itself, which repeated excavations have deprived of its protective layer of soil, as can be seen around the Parthenon (left). The marble statues of the Acropolis (below right) have been eroded by wind and rain for 24 centuries and in recent years this process has been greatly accelerated by air pollution. Sulphur dioxide spewed out by factories and central heating systems produces sooty crusts on the statues (below left, face of horseman on the West frieze of the Parthenon) that subsequently crack the marble. The Greek government has clamped down on pollution in the area surrounding the Acropolis.

Photos © Deutsches Archäologisches Institut, Athens

Detailed investigation includes examination of the cracks and internal hollows in the marble caused by earlier fires and explosions, by means of such modern techniques as ultrasonic measurements and gammagraphy.

Both these techniques make it possible to measure the strength of the structure without taking samples of the building material itself. The first involves measuring the speed at which ultrasonic waves travel through the marble, and has already been used on the elements supporting the coffered ceiling of the west part of the Parthenon.

Gammagraphy, which is being applied to marble for the first time, involves taking photographs with gamma rays from a cobalt source. These rays are capable of penetrating the marble architectural structure and producing a film similar to an X-ray. These photographs reveal any cracks and internal fissures in the marble, and thus allow a diagnosis of the causes of its weakness to be made.

The most serious cause for concern about the monuments on the Acropolis is not, however, connected with their general stability, but with the cracks which have been and which are still being caused by the oxidation of the iron inside the marble structures.

The ancient Greeks used small iron bolts and clamps in their architecture, but made them almost rustproof by coating them with lead. Nicolas Balanos failed to take similar precautions with the steel elements used in his extensive restoration between 1896 and 1933, possibly because he overestimated the properties of steel. Thus, almost all the buildings on the Acropolis had bolts inserted into them to join broken pieces, while steel girders were used, as in the porch of the Caryatids on the Erechtheum, to reinforce architraves and ancient beams.

All these metal parts rust because of the humidity of Athens and its proximity to the sea. Rusting not only lowers their resistance, but also causes the metal to swell and crack the marble into which it is embedded. A large number of fissures exist already, and in some places there is an immediate danger of collapse.

Thorough investigation has demonstrated that the only solution to this exceptionally serious problem is to remove all the steel elements and replace them with bolts of titanium, a metal that will not rust under any natural conditions.

Where the plans left by Balanos provide inadequate information concerning the position of the steel elements embedded in the marble, they can be located by means of gammagraphy.

The steel bolts and beams cannot be replaced without dismantling and reassembling all those parts of the monuments on the Acropolis which have been restored in the 19th and 20th centuries. A programme as extensive as this, which must conform with the principles noted above, requires many years' work, exceptional organization, and most important of all, exhaustive preliminary study.

In addition to the compilation of all available information from bibliographies, archives and earlier reports on the buildings of the Acropolis, minute documentation of these buildings began two years ago, including the preparation of photographs and detailed drawings of their present form. In the case of the Erechtheum, this task is approaching completion and detailed proposals of the measures needed for the building have almost been finalized.

In producing measured architectural drawings of the temples on the Acropolis, the technique of photogrammetry has been used on a limited scale. More traditional methods have been preferred which permit a diagnosis of the state of decay of each piece of marble, at the same time as the measurements are taken.

Another cause for alarm is the deterioration of the marble surfaces and espe-

Decline and fall of a mythical king

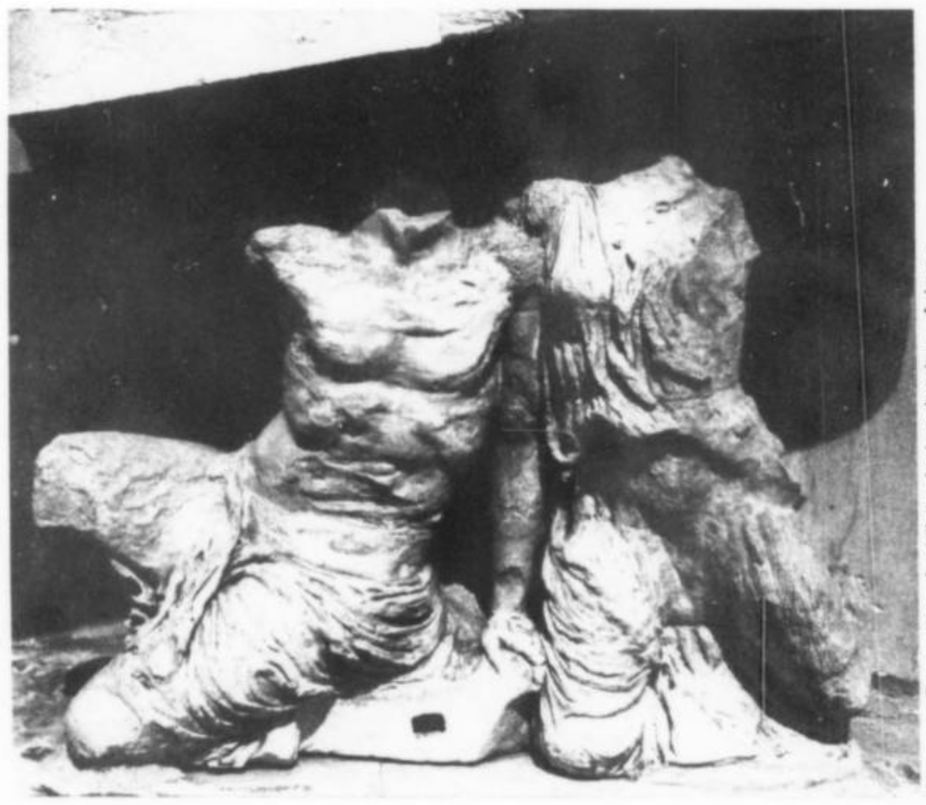


Photo © Deutsches Archäologisches Institut, Athens

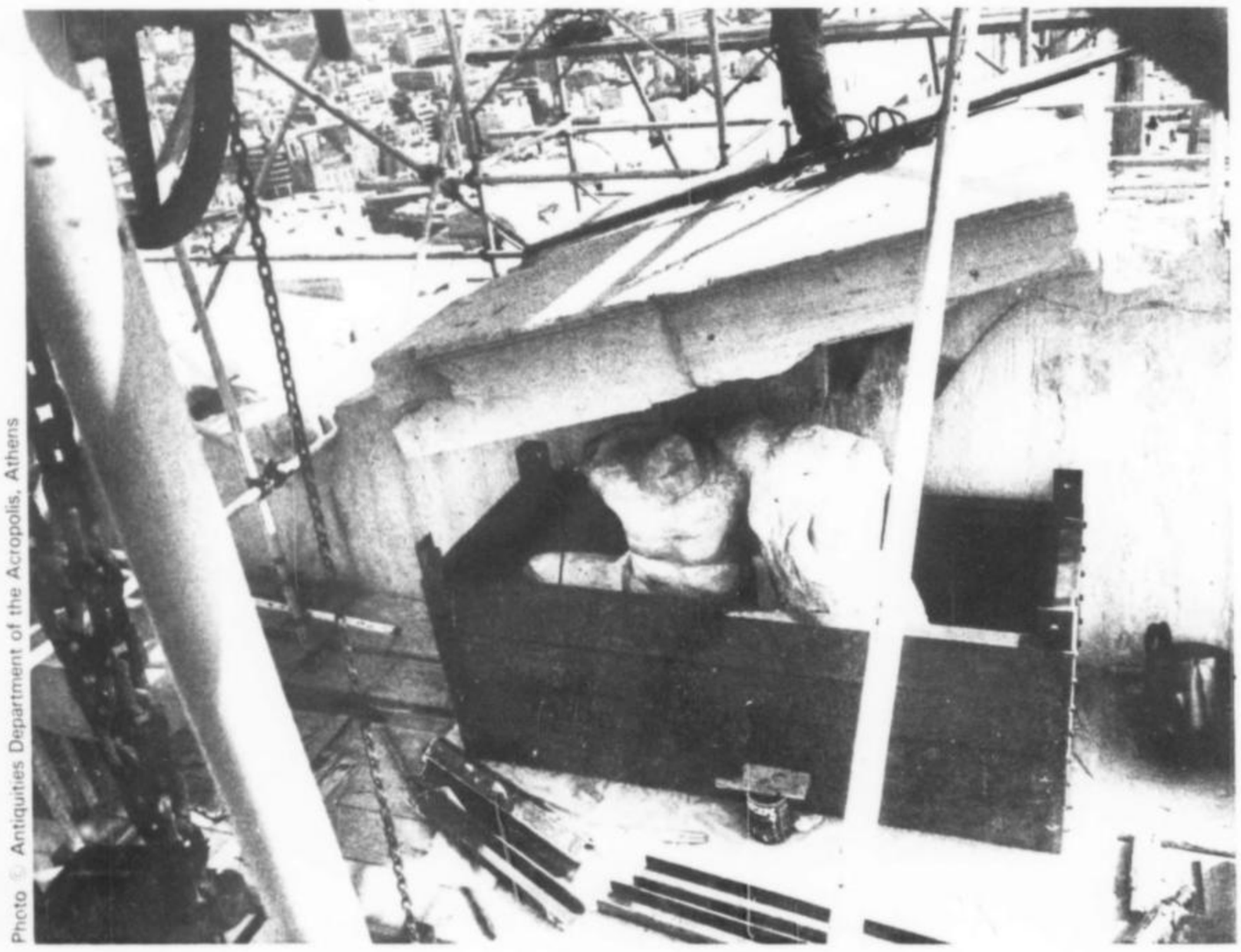
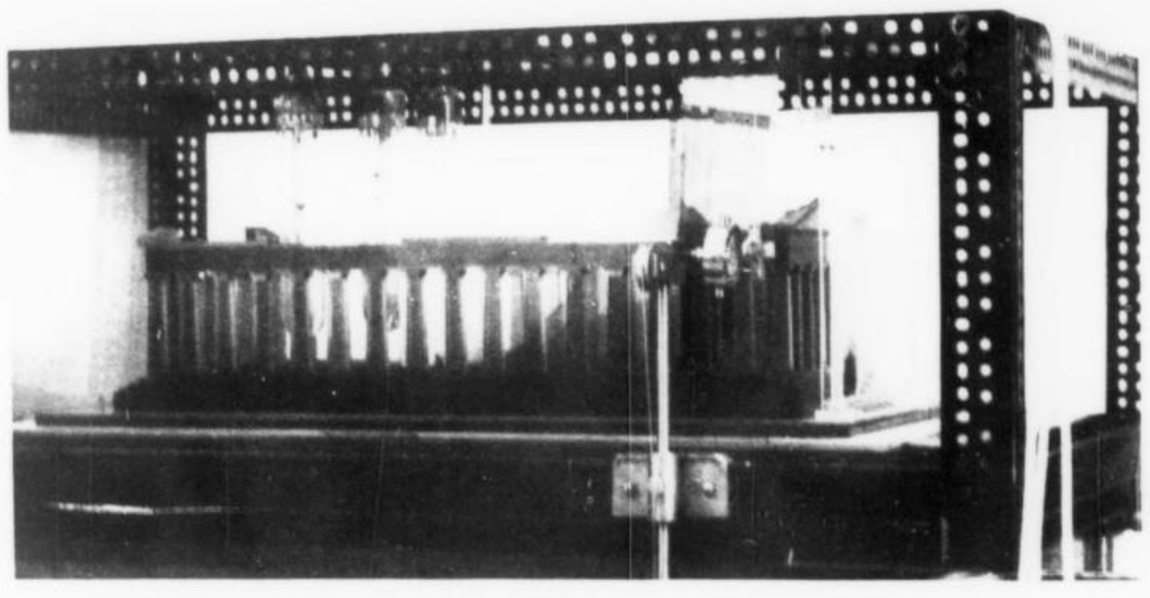


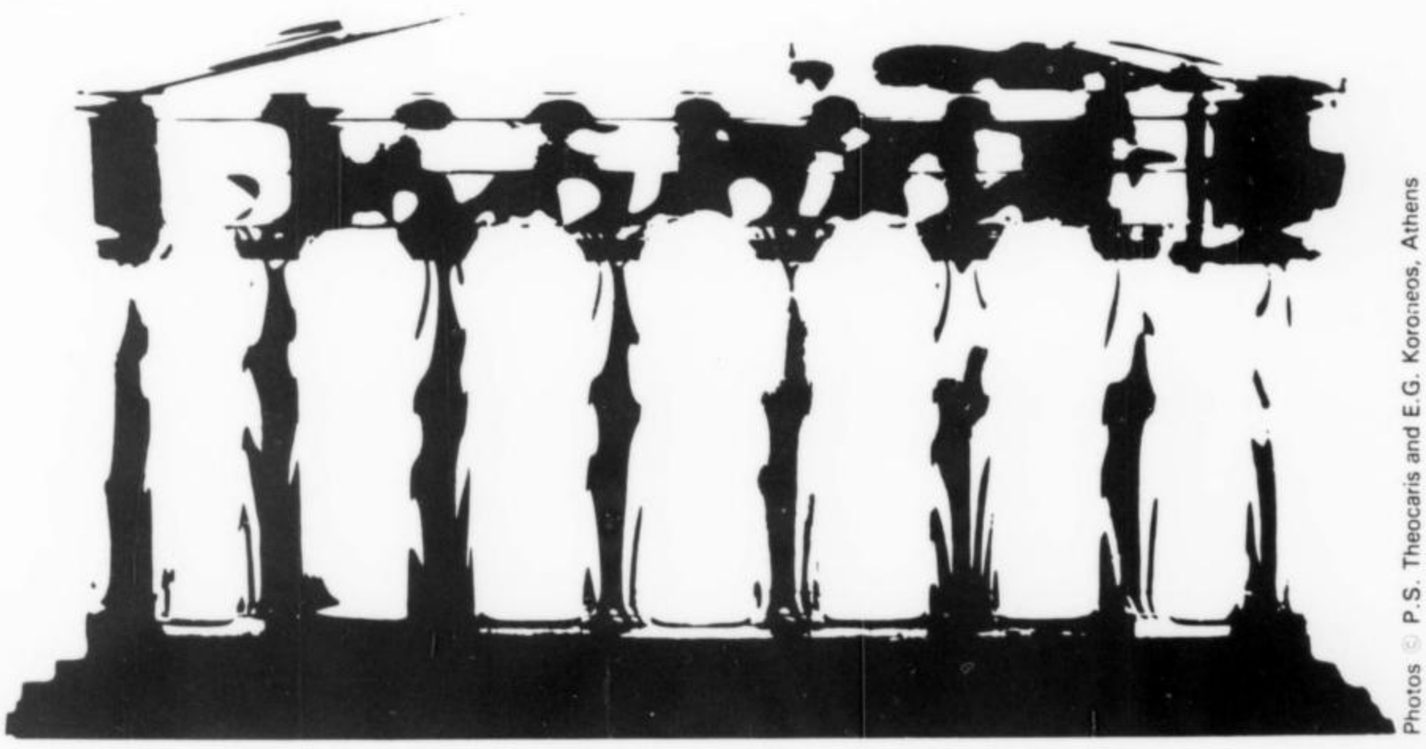
Photo © Antiquities Department of the Acropolis, Athens

Two legendary figures from Athenian history, Cecrops and his daughter Pandrosos, are depicted in this piece of sculpture from the western pediment of the Parthenon. According to ancient myths Cecrops was the first king of Athens, around the 16th century B.C. Over the centuries this major work of Classical Greek art has suffered extensive erosion and by 1976 its condition was so serious that it was lowered from the pediment (left) and removed to the Acropolis Museum.

Testing time for the Parthenon



Experimental model of the Parthenon (above) was made of synthetic resin to a scale of 1:100. Its designers hope to evaluate the stability of the monument and its capacity to resist wind pressure and possible seismic disturbances. Specially designed equipment is used to show the simulated stress patterns in visual form. Below, simulated stresses on the west façade of the monument.



Photos © P.S. Theocaris and E.G. Koroneos, Athens

cially the sculpture of almost all the monuments of the Acropolis. The surface of the Pentelic marble, a building material of splendid appearance and great strength, is becoming corroded and is disintegrating.

The main cause of the trouble is the sulphur dioxide contained in industrial fumes and in smoke from central heating systems. The smallest degree of humidity is enough to let this sulphur dioxide attack the marble surfaces, turning them into gypsum. This plaster-like substance either dissolves in the rain and is washed away or else retains the soot and dust of the city to form an ugly crust that subsequently cracks.

If one adds to this the continuous natural decay of the marble over a period of 24 centuries as a result of rain, hail, wind and above all frost, it may easily be appreciated why the Athenian masterpieces have for the past few years been facing an unprecedented danger.

The problem is obviously particularly acute in the case of the sculptures: the Caryatids of the Erechtheum, and the frieze and pedimental statues that are still on the Parthenon.

To remedy these ills, some temporary measures have been proposed in addition to a longterm clampdown on pollution. The Parthenon frieze and the Caryatids are already protected from rain and frost by relatively unobtrusive temporary wooden shelters, and the two statues from the west pediment have been replaced by copies and temporarily housed in the Acropolis Museum.

One proposal under consideration is that the Caryatids be completely enclosed in a transparent air-conditioned box, until the unavoidable task begins of dismantling the south portico of the Erechtheum in order to replace the steel reinforcements in its beams.

It has also been proposed (though the final decision has not been taken) to transfer the Caryatids to air-conditioned rooms in the Museum, so that they may be restored to their proper position as soon as environmental conditions permit. The copies which would take their place are already being cast (see back cover). Finally the possibility of protecting the marble by treating it locally remains under consideration; in this connexion the Second International Symposium on the deterioration of building stones was held in Athens in September 1976.

However, the requirement that any operation performed on the ancient structures should not be irreversible has ruled out the use of almost all the materials currently employed in building for the purposes of on-the-spot protection.

The Greek Government is actively seeking a radical solution to the problem of the polluted atmosphere of Athens. A zone has been defined around the Acropolis within which it is forbidden to burn oil, which is rich in sulphur, in the central heating systems of apartment blocks.

Meanwhile, a study has been made of the technical and economic problems involved in replacing oil on a wider scale by some other source of energy, such as diesel, gas or electricity. The high cost of this operation, which involves 5 million cubic metres of dwelling space, and the length of time required to implement the change, are now being examined by the city authorities.

The feeling of space on the Acropolis has changed considerably since antiquity. This is due in great measure to the archeological excavations of the 19th century (mainly after 1885), which exposed the bedrock at almost every point. These excavations uncovered the foundations of the buildings which had not been visible during the classical period, and made it difficult to walk on the surface of the rock.

The general disorder is increased by the hundreds of large and small pieces of stonework from buildings of different periods, which occupy a large area of space and obstruct the visitor's passage.

Finally, irreparable damage is caused by the feet of the visitors themselves. The destruction has reached alarming proportions both on the floors of the monuments and on the rock itself, that is, on the surfaces that were visible during antiquity. Ancient carvings, cavities to hold the bases of statues or the foundations of ▶

buildings, and the layout of the ancient pathways—all features of great interest —are in danger of disappearing.

The attempt to solve this problem began with a careful analysis of the present situation. Detailed topographical plans were prepared on a scale of 1:100, and photographs were taken of the surface of the rock from a small balloon. An inventory of the scattered pieces of masonry is planned, as well as a methodical system of indexing them before they are moved, so that they may easily be recognized and classified before they are put in their final place.

A study has also been made of the possibility of covering a large area of the rock with soil, so as to create easy access to the monuments, as well as an esplanade to the east of the Erechtheum.

Also being considered is the feasibility of moving the pieces of masonry and arranging them in such a way as to make the archeology of the Acropolis more readily comprehensible and to facilitate future research. A new ramp leading to the Propylaea, similar to that of ancient times, has also been proposed.

Finally, a decision has been taken to build a large new Acropolis Museum nearby, with modern facilities, to exhibit all the finds from the Acropolis, some of which are at present hidden away in storerooms. An architectural competition has been announced for the plans of this new museum.

As far as the urban landscape of Athens and its relation to the Acropolis are concerned, some improvements can be made. A number of town-planning provisions have been put into effect: tall buildings can no longer be put up close to the Acropolis and the neighbouring archeological sites. Measures have also been proposed for the preservation of Plaka, the old quarter that clusters around the lower northern slopes of the rock. Finally, expropriations of property have made it possible to reopen the Peripatos, a pathway for pedestrians that encircled the Acropolis in antiquity.

The Acropolis and its monuments have passed through difficult times before, during the course of their long history, and have survived to the present day with their ageless beauty, as a unique testimony to a great age in the history of Western civilization. In the attempt to hand on this cultural heritage intact to future generations, no effort can be considered too great.

■ **Charalambos Bouras**

Caryatids in need of care

Photo © Deutsches Archäologisches Institut, Athens

Photo © Archeological Society, Athens

The Porch of the Caryatids (right) was one of three entrances to the Erechtheum, a temple built to house a number of ancient sanctuaries. The serious problems posed by its conservation are now being examined by a team of leading Greek specialists (see also front and back covers). Of the six Caryatids—the maidens that support the roof—one (second from right on the façade) got a face-lift in 1968-1969 (below right, before and after restoration). Another (photo left) is in fact a copy of a Caryatid which has been in the British Museum, London, since 1816.
This is the second time that a major conservation project has been undertaken on the Acropolis in the 20th century: in unusual photo taken in 1902 (below left), the roof of the Porch has been dismantled to allow steel girders to be inserted. Not knowing that the steel would eventually rust and swell, causing structural damage, the architect in charge used the same technique elsewhere on the Acropolis, thereby creating one of the most arduous problems that specialists face today. Luckily, more sophisticated techniques are now available. One of them, photogrammetry, enables technicians to plot the precise contours of sculptures or monuments down to the last millimetre and later to reconstitute their every feature. Below, photogrammetric representation of Caryatid at southwest corner of Porch.

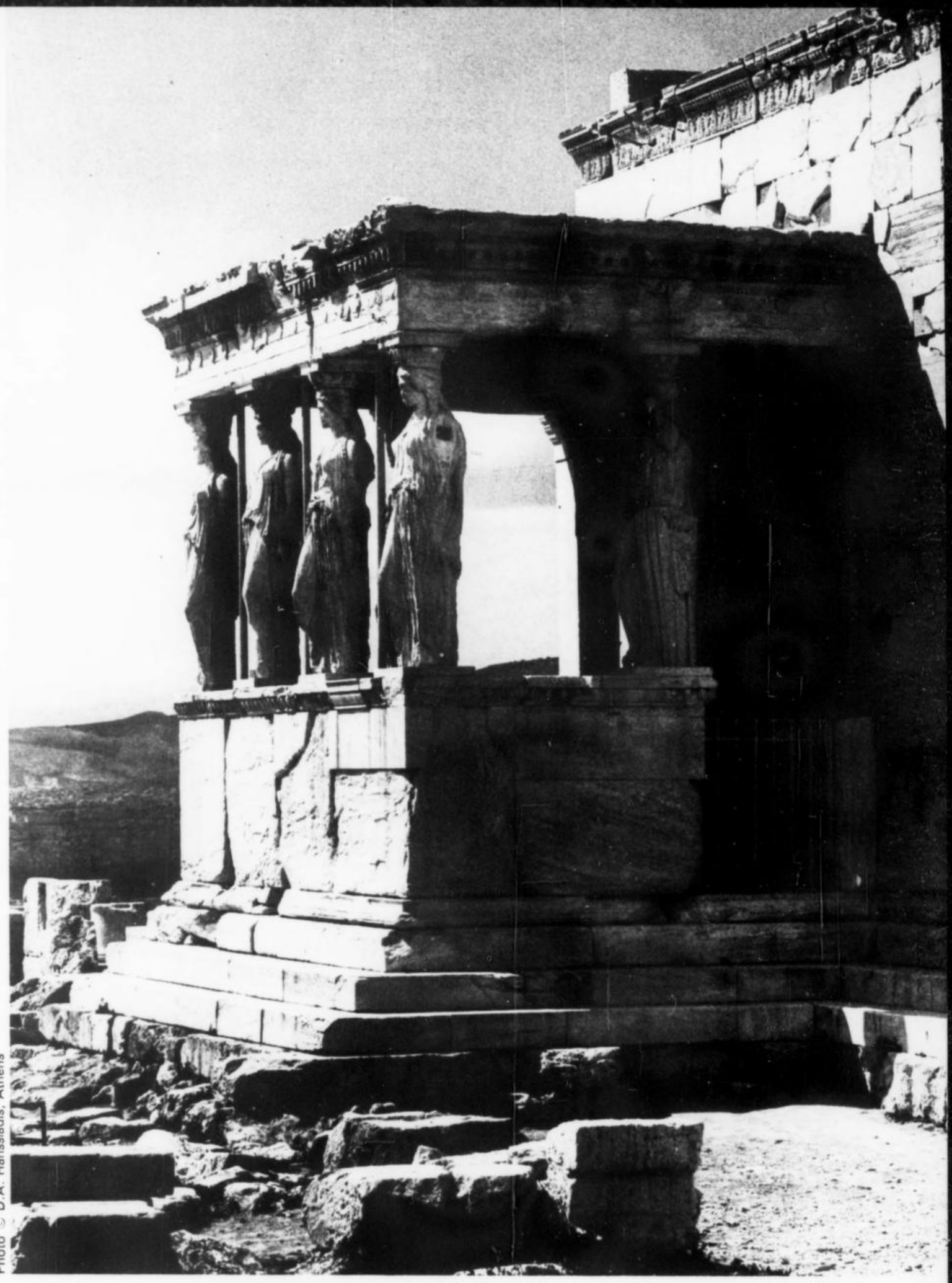


Photo © D.A. Harissiadis, Athens

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Photos © Acropolis Museum, Athens

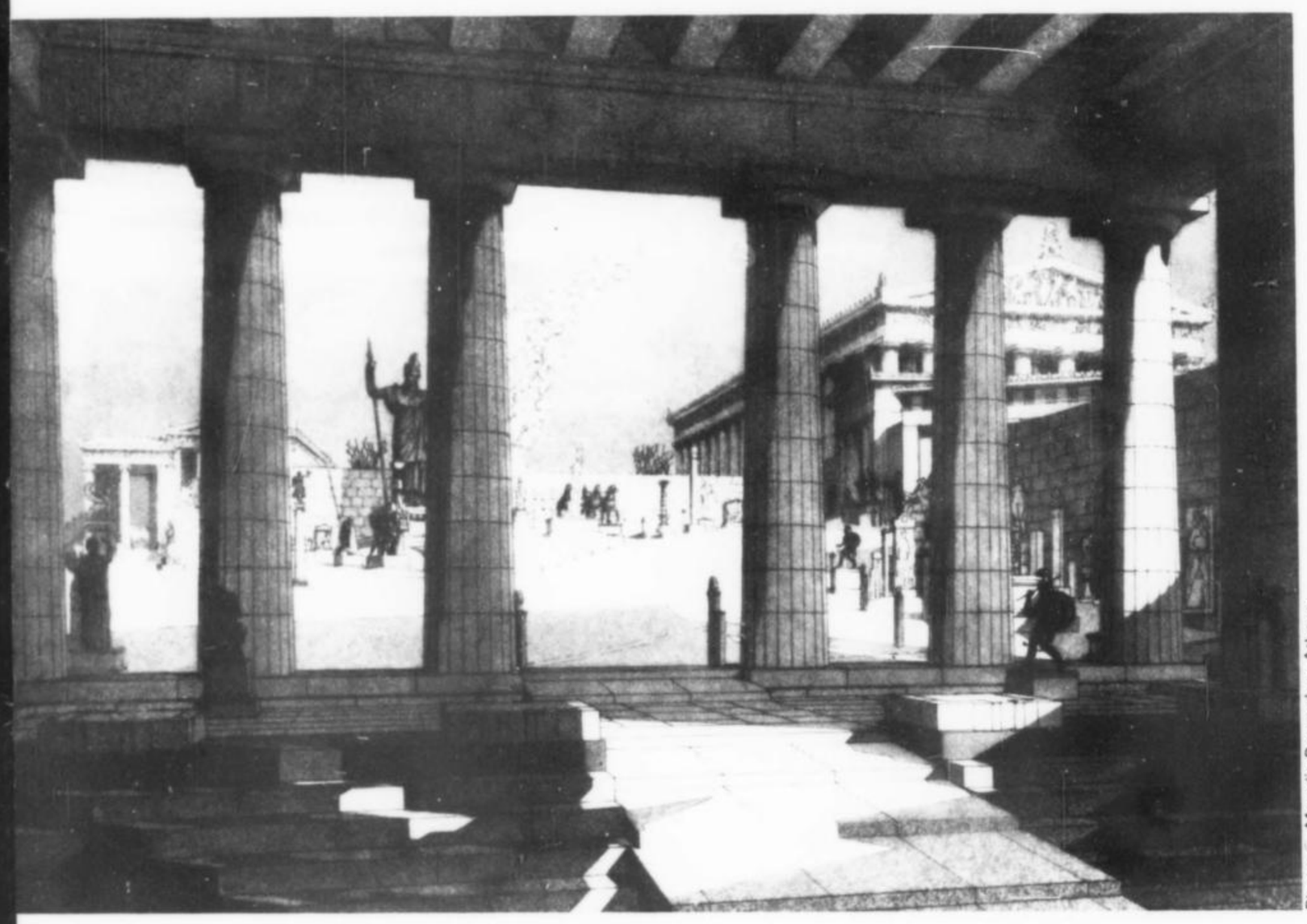

Photo © Manolis Bernardos, Athens

Left, the Acropolis as it might have looked to an Athenian 2,400 years ago from the steps of the Propylaea (foreground). Between the Erechtheum (left background) and the Parthenon stands a colossal bronze statue of Athena. According to Pausanias, a Greek traveller and writer of Antiquity, its gleaming helmet and spear-point could be seen by mariners off Cape Sunium 50 km away. Long before Pericles built or inspired these great monuments in the 5th century B.C., the Acropolis was already a centre of worship. Carving of a three-headed monster (right) is from a 6th-century-B.C. temple known as the Hecatompedon, which may have stood on the site of the Parthenon.

PUTTING THE CLOCK BACK 24 CENTURIES

An archeologist evokes the Acropolis as it was in Antiquity

by John Travlos

THE Holy Rock known to history as the Acropolis is a massive limestone hill, 330 metres long and 170 metres wide at its base, which rises to a height of just over 156 metres above sea-level, although no more than 50 metres above the surrounding plain.

Its steep, almost vertical sides (except in the west, where it slopes more gently), its springs of water, and the large number of caves in its flanks offered a safe refuge to its earliest inhabitants, who settled there during the Neolithic period, about 3500 B.C.

In order to form a clear picture of the topography of the Acropolis in the 5th century B.C., one must first be familiar with the monuments and other remains discovered during excavations. These make it possible to reconstruct the history of the Holy Rock from Neolithic times until the period when the artists of the classical age created a vast new overall design.

The Parthenon, the Erechtheum, the Propylaea and the temple of Athena Nike (giver of victory) form an architectural ensemble that gives expression to the classical spirit and the perfection achieved by the creative artists of the 5th century B.C. However, they are usually examined by archeologists and architects as separate monuments.

Until now there has been no systematic attempt to establish the topography of the Acropolis, or to map out and restore the ancient pathways and open spaces, so that the modern visitor may stroll about and admire the monuments, like the worshipper in ancient times.

The destruction of these monuments, which drastically altered the appearance of the Acropolis, began in the 17th century and continued until the Greek War of Independence, which broke out in 1821. The Propylaea was seriously damaged as the result of a gunpowder explosion in the middle of the 17th century, while the temple of Athena Nike was dismantled by the Turks shortly before a Venetian attack in 1687, and its masonry used to construct a great bastion in front of the Propylaea.

The Parthenon was blown up by the Venetian Francesco Morosini in 1687, and the Erechtheum reduced to ruins. The work of destruction was completed later by the systematic pillaging of the sculptures that decorated the temples.

With the aid of descriptions by 18th and 19th century travellers, and old pictures and drawings, it is possible to imagine what the Acropolis looked like during the early years of Greek independence.

The Holy Rock was enclosed on all sides by towering defensive walls of great thickness, which were particularly strong on the west side, in front of the Propylaea, so as to protect the entrance. A series of three bastions mounted with cannons formed a

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JOHN TRAVLOS, *noted Greek architect and archeologist, is an authority on ancient Athens and its monuments. As architect to the American School of Classical Studies in Athens (1935-1973) he was closely involved in excavating the city's ancient Agora, supervising the restoration of two of its monuments. He has published many studies in archeological journals, and a number of books on Athenian history, including (as editor) a* Pictorial Dictionary of Ancient Athens *(Thames and Hudson, London, 1971).*

Photo © Deutsches Archäologisches Institut, Athens

redoubtable fortification at this point. To reach the Acropolis from the outer wall, it was necessary to pass through these bastions and through six well-protected gates.

Inside the fortifications, the lower parts of the monuments were covered by massive marble blocks from the damaged temples. About 300 small houses, in which the soldiers of the Turkish garrison lived with their families, were built on this layer of debris.

The task of uncovering the ancient monuments of the Acropolis began in April 1833, immediately after the liberation of Athens and the departure of the Turkish garrison. In August 1834, the Acropolis ceased, by royal decree, to serve as a fortress. The work was then placed on a systematic basis, and the first excavations took place. Demolition of the medieval buildings (dating from the Byzantine, Frankish and Turkish periods), many of which had been built over the ancient monuments, began in 1835.

The same period saw the demolition of the great bastion in front of the Propylaea and the initial restoration of the temple of Athena Nike, using elements of the original structure discovered in the walls of the bastion. During major excavations on the Acropolis between 1885 and 1890, all the ancient monuments were uncovered and the site assumed the form we know today.

The Acropolis Museum was enriched by the addition of many ancient sculptures, the famous statues of maidens called the *Korai,* the pedimental sculptures and a large number of architectural fragments, all discovered in the rubble. When the excavations were completed, work began on the restoration of the Parthenon, the Erechtheum and the Propylaea, while the second restoration of the temple of Athena Nike was finished just before the Second World War.

The site of the Acropolis was thus inhabited in Neolithic times. However, the earliest temples were erected during the so-called geometric period, which lasted from c. 900 until c. 700 B.C. and takes its name from the geometric motifs which decorated Greek pottery produced at that time.

By the 6th century B.C., there were two large temples dedicated to Athena: the Hecatompedon, which was 100 Attic feet long and stood on the site subsequently occupied by the Parthenon, and an ancient temple whose foundations are preserved to the south of the Erechtheum. The Acropolis was covered with other, smaller buildings, altars and votive monuments, and it was still encircled by the so-called Cyclopean wall which had once protected the palace of the Mycenean king, although by now it had ceased to serve as a fortification.

In 556 B.C., the highest part of the Mycenean tower that guarded the entrance to the citadel was demolished, and the first altar in honour of Athena Nike was built on this conspicuous site. The occasion for this was the consecration of the Panathenaea, the festival of Athens (1).

(1) The Panathenaea was an annual summer festival celebrated by the Athenians on the birthday of Athena. It was eventually held every four years with special splendour. The celebrations at the quadrennial Great Panathenaea consisted of athletic, musical and oratorical contests, and culminated in the Panathenaic Procession along the Sacred Way up to the Parthenon to present the goddess with a new robe or peplos.

The earlier, winding road which began in front of the tower of Nike and led to the Acropolis could no longer cater for the crowds that followed the Panathenaic Procession, and a straight ramp, 10 metres wide and 80 metres long, was now constructed. The fine retaining wall (mid-6th century B.C.) which has survived along the axis of the Propylaea formed part of this ramp.

After the Athenian victory at Marathon in 490 B.C., the Hecatompedon was demolished, and work began on the construction of the first marble Parthenon. At the same time, a monumental propylon (entrance) with several doors was built on the site of the ancient Mycenean fortified gateway. It was later replaced by the Propylaea that can be seen today.

Such was the appearance of the Acropolis until 480 B.C., when it was captured and razed by the Persians, who caused terrible damage to the temples, shrines and votive monuments. Their fate was shared by public buildings, houses and sanctuaries throughout the city, whose walls were systematically destroyed by the invader.

In 479 B.C., after their brilliant victories at Salamis and Plataea, the Athenians made it their first concern to build a new wall to protect their city and to reconstruct the monuments that had been destroyed. This building programme was brought to completion in the second half of the 5th century, under the guidance of Pericles, who succeeded, with the aid of inspired architects, sculptors and painters in producing the matchless masterpieces that still arouse our admiration today.

Majestic temples and altars arose on the Acropolis to replace those destroyed by the Persians. The new defensive walls also served as retaining walls to contain the mass of rubble deposited on the Rock to increase its area and to level its surface.

The architects who set out to rebuild the monuments on the Acropolis were able to approach the various problems confronting them with much greater freedom than in the lower city, where their activities were limited to the Agora, "the Place of Gathering."

The work which began on the Acropolis was based on a new architectural design: the Propylaea were aligned differently, a number of ancient shrines and altars were buried when the rock was levelled, and new pathways and open spaces were created.

The Parthenon, the new temple in honour of Athena Parthenos (Athena the Virgin), was built between 447 and 432 B.C. Its plans were drawn up by Ictinos and Callicrates, and its decorative sculptures were produced by Phidias, working in collaboration with other talented artists. The Erechtheum, an elegant Ionic temple smaller than the Parthenon, was erected to replace the Old Temple of Athena at a later date, though still in accordance with the initial plans. The expressiveness and delicacy of its Ionic style contrast sharply with the austere Doric style of the Parthenon.

New Propylaea (437-432 B.C.) were built by the architect Mnesicles on the western side of the Acropolis on the site of the earlier propylon but facing in a different direction. This change was made so that the worshipper arriving at the Acropolis would be awed by the sight of the colossal statue of Athena Promachos (Athena the Warrior) standing precisely on the axis of the Propylaea, framed by the Parthenon to the right and the Erechtheum to the left.

The Propylaea, in the austere Doric style, form a monumental entrance and façade to the sanctuary of the Acropolis. The vast central part, which constitutes the entrance, is framed by two smaller wings. The south wing was taken up by a sanctuary, the elegant Ionic temple of Athena Nike. The decision to build it was taken in 448 B.C., but construction began only in 427 B.C., based on plans by Callicrates, and the temple was completed a few years later. The fine marble parapet decorated with figures of Nike (the Giver of Victory) was set in place around the top of the tower in 410 B.C.

Inside the Acropolis, just beyond the Propylaea, is a large esplanade 50 metres long and 43 metres wide and bounded on each side by shrines. To the south stood the shrine of Artemis Brauronia (the bear goddess) and the Chalcothek, a long rectangular building where bronze weapons were housed. To the north there was a small building, the rampart, and the house of the Arrephoroi, the maidens who were cloistered on the Acropolis for almost a year in order to weave the *peplos* of Athena. On the eastern side, the square ends at the retaining wall of the terrace of the Old Temple of Athena, where stood the colossal statue of Athena Promachos.

This point marked the beginning of two passageways, one leading to the Parthenon and the other to the Erechtheum. The passage that led to the Parthenon, known as the Sacred Way, is today covered along its entire length by ancient blocks of marble and other pieces of masonry. Both the site and the width (6 to 7 metres) can be determined with great accuracy, however, from the cuttings in the rock for the foundations of the two retaining walls on either side. One of these walls supports the terrace of the Parthenon and the other the Old Temple of Athena.

The American architect G.P. Stevens has advanced the theory that the retaining wall of the Parthenon terrace reached almost to the east end of the temple and that the Sacred Way must thus have been 86 metres long. My own latest investigations have shown, however, that the cuttings which have been preserved were not designed for the construction of a continuous retaining wall but for a series of dedications, which in my view formed the southern edge of a large sacred area.

It is thus possible to demonstrate that the Sacred Way was only 54 metres long, and ended at the point where the inscription of *Ge Kourotrophos* ("Mother Earth of Youths") was incised. It is at this point that another large square begins, the precise limits of which can be determined with precision. It was bounded on the south by the Parthenon and the row of votive monuments, on the north by the Erechtheum, on the east by the shrine of Zeus Polieus, and on the west, at least until the middle of the 4th century B.C., by the Opisthodomus (rear part) of the Old Temple of Athena.

In the centre of this vast esplanade which measured 60 metres by 60 metres, stood the great altar of Athena. I believe that this was the sacred courtyard needed to hold the immense crowds participating in the Panathenaic Procession, which, as we know, ended at the great altar of Athena.

Such in all essentials was the appearance of the Acropolis until the end of Antiquity. Later additions were few, the most important being the circular temple of Rome and Augustus which stands in front of the east side of the Parthenon. In the middle of the lst century A.D., the ramp which led to the entrance to the Propylaea was also replaced by a monumental marble staircase.

Thus the information recorded by the Greek geographer and historian Pausanias, who visited Athens sometime in the middle of the 2nd century A.D., constitutes the most complete and reliable source concerning the appearance of the Acropolis in the 5th century B.C. In his *Guide to Greece* he provides a detailed description of the monuments, statues and shrines which in his time still existed on the Holy Rock.

■ **John Travlos**

Youthful faces from a buried past

The Parthenon that Pericles commissioned and Phidias decorated in the 5th century B.C. was the third if not the fourth temple to be built on the same site on the Acropolis. The approaches to the temples which stood on the Rock towards the end of the 6th century B.C. were lined with bronze or marble statues of youths and maidens (see following double page), the *kouros* (youth) being portrayed naked, the *kore* (maiden) always fully clad. Shown here, a *kore* dating from around 500 B.C.

Photo © Tombazi, Athens

CONTINUED PAGE 17

1

Photos © Tombazi, Athens

2

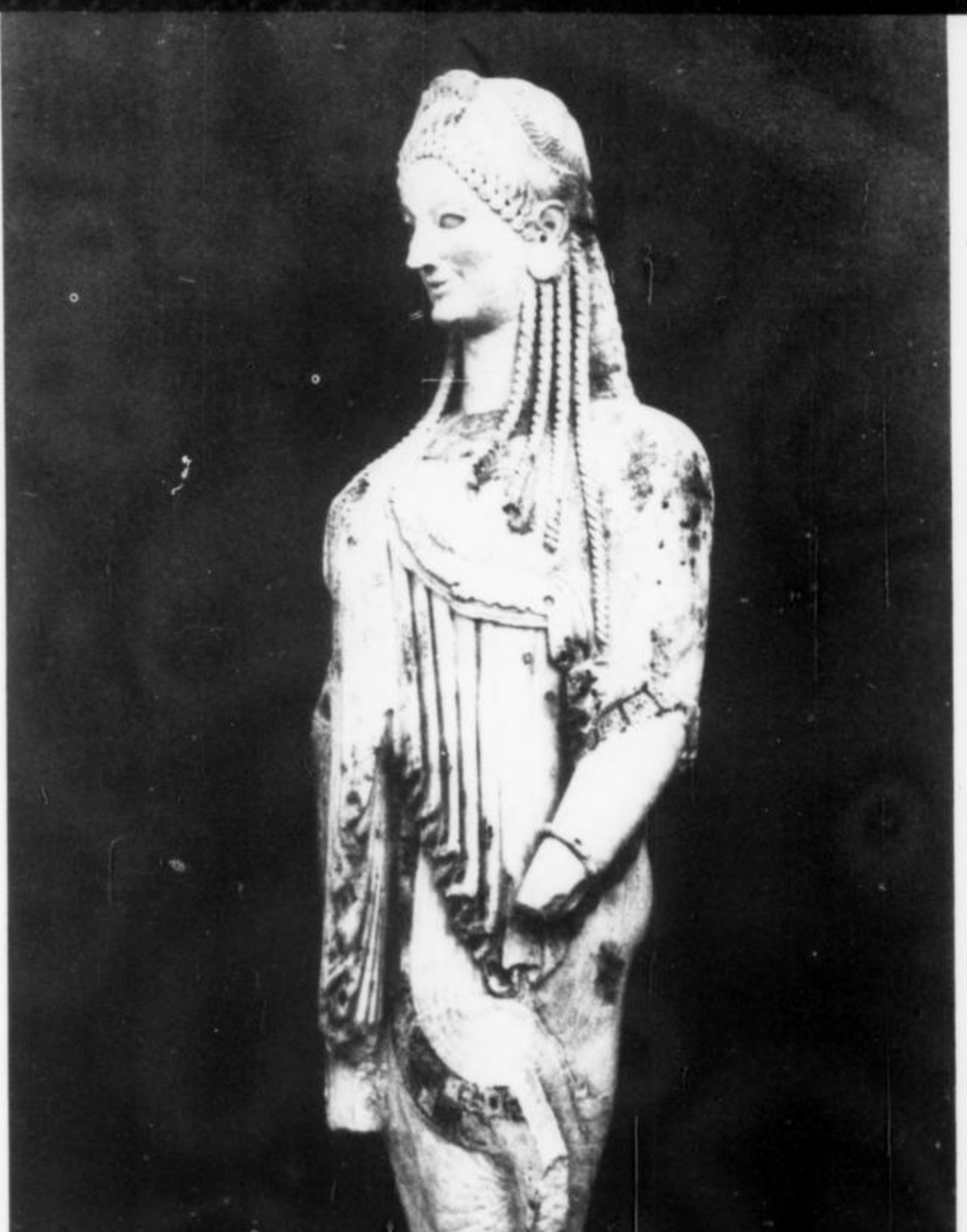
3

Photo © Louvre Museum, Paris

6

Youthful faces from a buried past *(Continued)*

According to legend, one of the walls around the Acropolis was built under Athena's guidance by Cyclopes and Giants (photo 6) using massive blocks of stone. The remains of this ancient wall, still known as the "Cyclopean rampart", indicate that in some places it was as much as 6 m. wide and over 10 m. high. Later, in 480 B.C., the Persians sacked Athens and desecrated or destroyed the temples and statues of the Acropolis. When the enemy withdrew, the Athenians buried the mutilated statues in caves and sacred cemeteries, where they were unearthed by archeologists at the end of the 19th century. These votive statues are among the finest examples of Greek Archaic art. A particularly outstanding specimen is this early 6th-century-B.C. figure (1) of a man bearing a sacrificial calf to Athena. On this double page we present a selection of these graceful figures, some smiling, some grave:(4) *Kouros* from the island of Melos, around 550-540 B.C.; (3) *Kore* with a *peplos* (robe) around 540 B.C.; (5) *Kore* 1.20 m high, around 520 B.C.; (2) *Kore* dating from 520 B.C.; (7) *Kore* 1.82 m high, 520-510 B.C.



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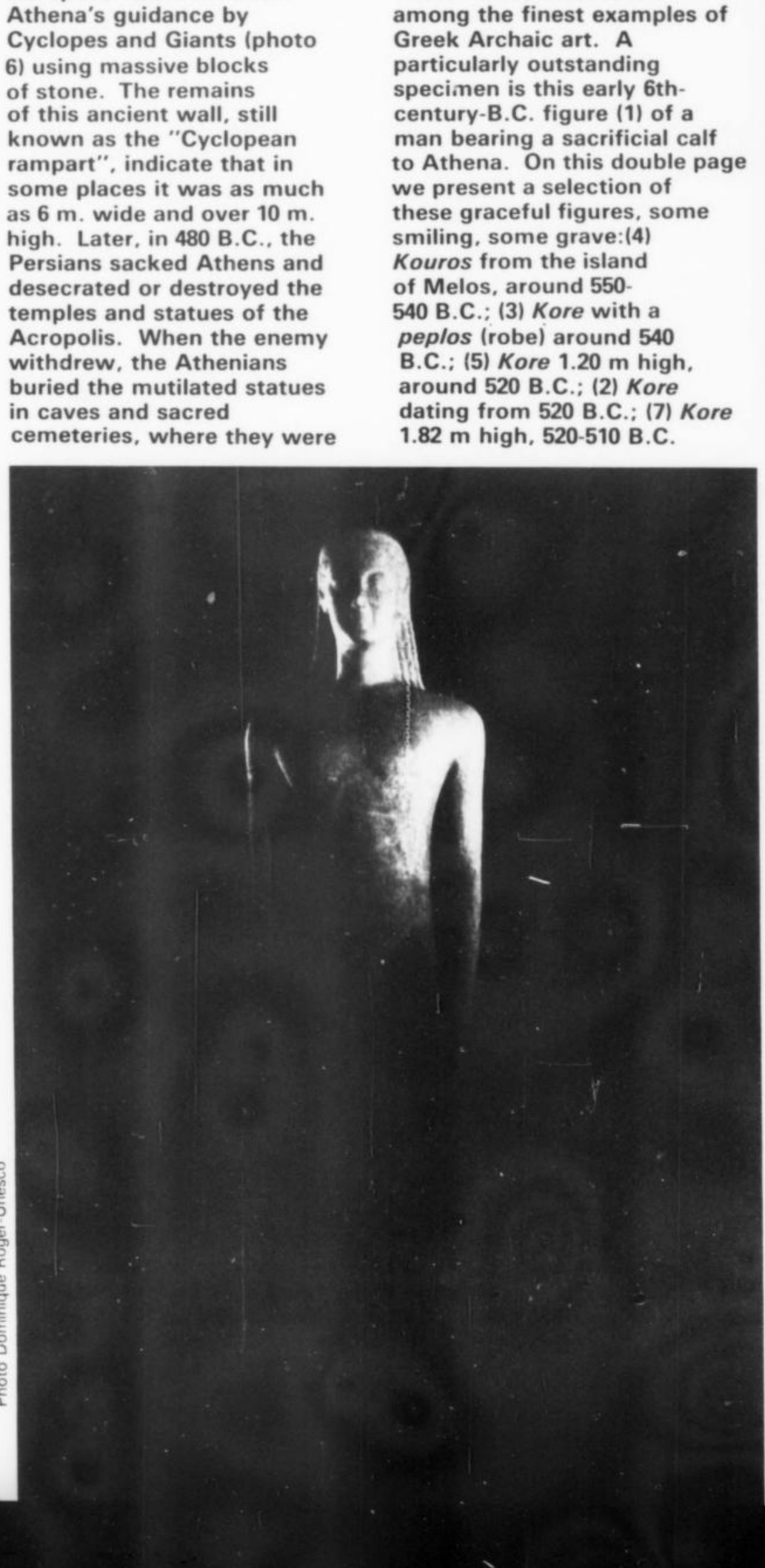

Photo Dominique Roger-Unesco

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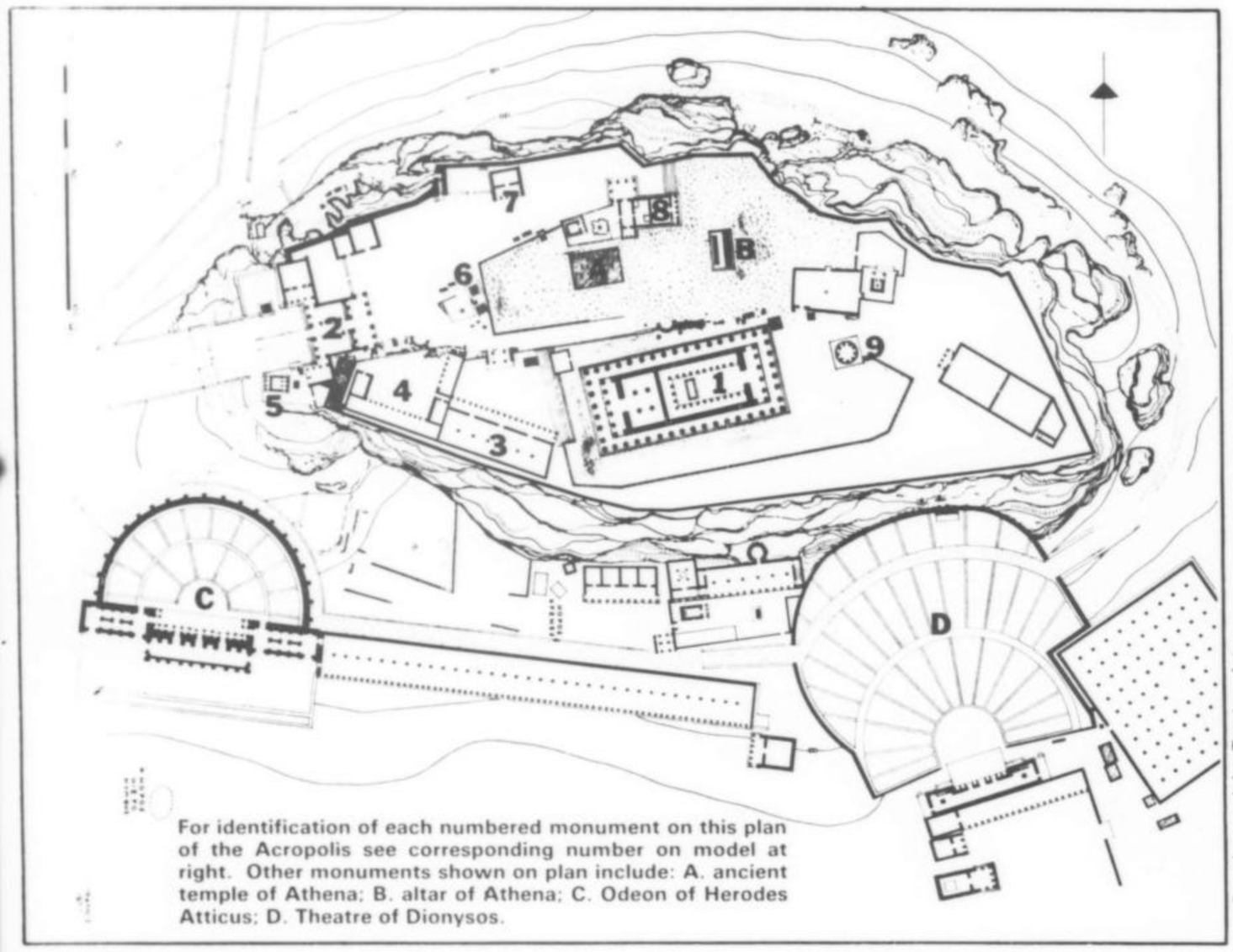
Photos © Tom

Photo © Deutsches Archäologisches Institut, Athens

The Parthenon in perspective



For identification of each numbered monument on this plan of the Acropolis see corresponding number on model at right. Other monuments shown on plan include: A. ancient temple of Athena; B. altar of Athena; C. Odeon of Herodes Atticus; D. Theatre of Dionysos.

Drawing John Travlos, Athens

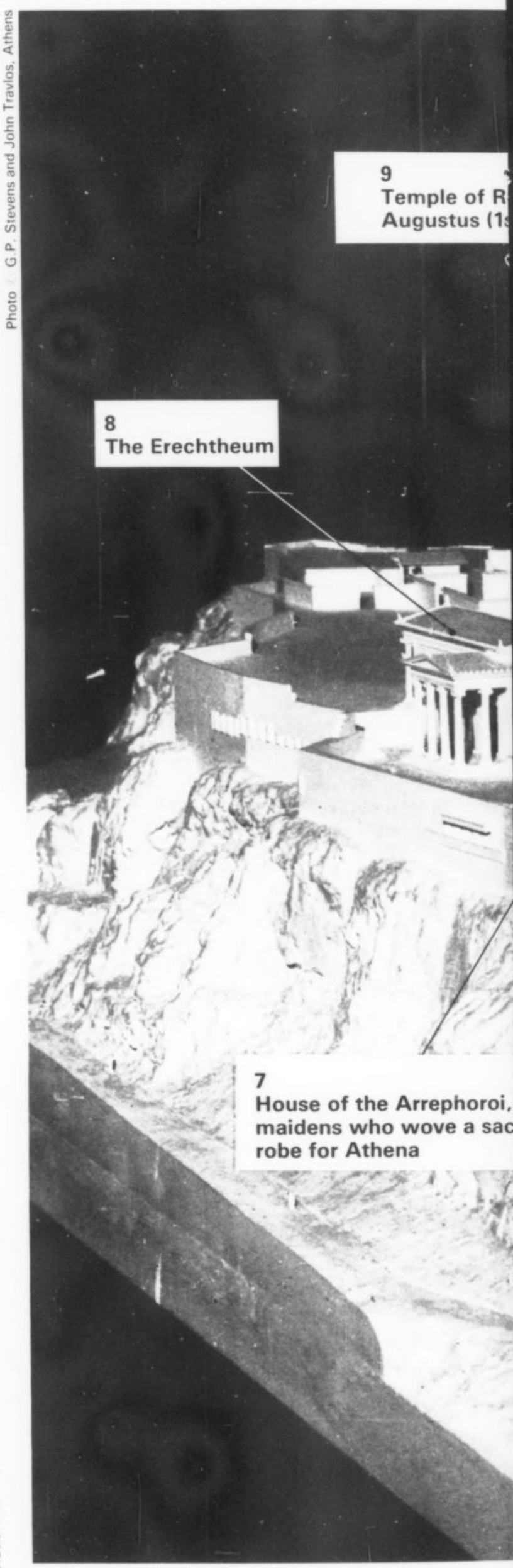


Photo G. P. Stevens and John Travlos, Athens

Model (above) and plan (left) show the Acropolis in t idea of what it looked like in the 5th century B.C added later. Above left, reconstitution of a corne "metopes" or slabs carved with high-relief figures fo colours. At top of double page are reconstructions

bazi, Athens

ome and
st cent. A.D.)

1
The Parthenon

2
The Propylaea

3
The Chalcothek,
storehouse of bronze
implements and arms

4
Sanctuary of Artemis Brauronia,
the bear goddess

5
Temple of Athena Nike

red

6
Statue of Athena Promachos
(Athena who fights in the
foremost ranks)

he 2nd century A.D., but they give a good
since only secondary monuments were
of the Parthenon. It shows the marble
rming a frieze which was painted in bright
of the huge triangular pediments at each
end of the temple, which were originally filled with groups of figures sculpted in the round. Eastern pediment (page 18) shows the birth of Athena, fully armed with spear and shield. On western pediment (page 19) Athena and the sea-god Poseidon struggle for supremacy in Athens. Today only fragments remain in place of these sculptures which have been called "the incomparable peak of Greek art."

Athenian democracy's grand design

by
Manolis Andronicos

THE Acropolis as it appears today is essentially a product of the classical age, even though the monuments that have survived from its amazing history range from vestiges of the Mycenean period to the medieval tower at the southwest corner of the Parthenon.

The admiration for classical art, which saw in its manifestations the archetype of an ideal Beauty, disembodied and superhuman in its calm detachment, helped to distort the manner in which these works were perceived. Our own age has reacted against that attitude; with the discovery of archaic, pre-classical art, the pendulum has swung the other way.

Well-worn platitudes concerning the harmony, beauty and serenity of classical art are no longer enough, for we now know that the art of any society is an expression of the relationship between deep-seated contradictions. It is consequently in Athenian history itself that we must seek an interpretation of the architectural elation reflected in the buildings of the Acropolis.

An initial point to be emphasized is that these buildings—whose celebrity is so well-deserved—were only a part of the great programme of public works initiated during the period of Periclean democracy.

MANOLIS ANDRONICOS, *professor of classical archeology at the University of Thessalonika, is the author of many studies on Greek archeology and history. Among his works translated into English are:* The Acropolis, Delphi *and* Olympia, *all published by Caratzas Bros., New Rochelle, U.S.A., 1975. He also contributed to* Greek Museums, *Barrie and Jenkins, London, 1976.*

How, indeed, can one fail to be amazed when one considers not only the number of edifices raised between 450 B.C. and 400 B.C., but also their variety, in form and function alike? In Athens itself, this period saw the construction of such buildings as the Strategion (military headquarters), the new Bouleuterion (where the Council met), the Mint, the odeon of Pericles, the Pompeion, the south porch of the Agora, the Chalcothek (a storehouse of bronze implements and arms), and the porch of Artemis Brauronia (the bear goddess) on the Acropolis.

During the same period, the first theatre of Dionysos was fitted out, while an abundance of religious buildings made their appearance, including the Parthenon, the Propylaea and the Temple of Athena Nike, the Erechtheum, the Temple of Hephaistos (the Theseum) and the Temple of Apollo Delphinios.

This feverish activity was an outward expression of the inner wealth and ambition of Athenian democracy under the guidance of Pericles. The combination of strength and equilibrium found in the forms of classical art constitutes an intellectual counterpoint to the social and political stability of Athens at a rare moment in history when deep contradictions were in a state of balance.

Classical art is thus an attempt to reconcile opposing tendencies which, instead of cancelling each other out or yielding one to the other, resolve their differences through a process of thoughtful—one might say "democratic"—dialogue.

But behind this facade of harmony and coexistence, bold and radical forces were at work. Together with his friends Anaxagoras the scientist, Protagoras the philosopher, Phidias the architect and sculptor, and Damon the musician, Pericles dreamed of transforming Athens into the political, economic and intellectual capital of Greece.

Inspired by an enlightened patriotism, the Periclean circle believed that the whole world should rally round Athens and accept a supremacy that threatened neither friend nor enemy but was merely a fact of history.

This outlook conditioned Pericles' programme, which set as a priority the reconstruction of the monuments on the Holy Rock, symbol of the city's age-old history and site of its ancestral cults. Barbarians (1) had burned down the ancient sanctuaries; here was a unique opportunity to reconstruct the Acropolis in its entirety. Its three outstanding monuments, the Parthenon, the Propylaea and the Erechtheum, linked by a relationship of function, would reflect through their audacious architecture the inventiveness of Periclean democracy.

Indeed, the buildings of the Acropolis reflect more than a state of peaceful coexistence between the traditional Doric and Ionic styles; they are a synthesis of these styles, brought together in an architecture that has no precedents. What is more, the Doric and Ionic elements themselves transcend the limits of their respective traditions and assume a new, specifically Attic form.

Let us look first at the gateway to the Acropolis, the Propylaea. Here, the architect, Mnesicles, took the simple form of the propylon (a gateway sheltered on each side by an overhanging roof supported on two pillars) and composed, with a host of architectural innovations, a matchless prelude to the buildings which lie beyond. The underlying form and its components are readily discernible; what is amazing is the

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(1) The Greek word *barbaros* did not necessarily have a pejorative sense. It was simply used to designate all those who did not speak the Greek language.

Photo © Tombazi, Athens

A masterpiece of the Greek Doric order (style) of architecture, the Parthenon also incorporates elements of the more decorative Ionic style. Through these badly eroded Doric columns on the west side of the temple can be seen part of the superb Ionic frieze, the work of the great sculpor Phidias, encircling the *cella* (the temple's inner sanctum).

imaginative and creative manner in which the parts are combined in the whole without losing their individual value and without obscuring the essential purpose of the building.

Equally simple and ingenious is the inner Ionic colonnade. Vast crowds of Athenians were expected to visit the sanctuary; as much space as possible had to be reserved for their passage through the entrance. Instead, therefore, of placing the thicker Doric columns both outside and inside the portal, the architect supported the roof of the central passageway on the more slender Ionic pillars, which could be built to the required height, but which took up less room at ground level.

Passing through this monumental entrance, we find ourselves on the Holy Rock, face to face with its two most famous buildings: the Parthenon, to the south, and the Erechtheum, to the north. Both are dedicated to the same goddess—Athena, the city's patron. "Live in happiness, people of this city, seated beside the Virgin of Zeus, and return her love," wrote Aeschylus in the *Eumenides.*

Pericles wished a special temple to be dedicated to Athena, who was to be represented in an incomparable manner by a gold and ivory statue commissioned from his friend Phidias.

Athena is thus the apotheosis of the Athenian city-state, or rather, the expression of its divinity. The outward appearance of the goddess matches the outward appearance of the city over whose destiny she presides. Her temple—as conceived by Pericles and his counsellors—is an outstanding symbol of Athens in the heyday of its glory.

The Parthenon, which is the product of collaboration between the architects Ictinus and Callicrates, under the decisive guidance of Phidias, is a building of vision, designed and realized with matchless skill.

That the enormous amount of money required for its construction was collected in so short a time is a tribute both to the determination of Pericles and to the state of the city's finances.

Construction began in 447 B.C. and was completed by 438 B.C.; a further six years were required for the sculptures on its gable ends, or pediments.

Measuring 31 × 70 metres along the top step of its foundations, the Parthenon is the largest of the Greek temples, the only one to be built entirely of marble and the only temple in the Doric style whose metopes (square spaces above the outside colonnade) of which there are 92, are all decorated with sculptures.

It is not these measurements, however, which attract attention, but rather the outstanding quality of execution and the spirituality which emanates from the material elements. For the first time in Greek architecture, as a result of Phidias' insistence that his gold and ivory statue must be comfortably housed, the internal volume of a temple determines its external form.

The proportions of the building are based on the ratio known as the "golden section". In the case of the Parthenon, the ratio is 4 : 9, reflected in the relationship between the breadth and length of the stylobate (the stepped foundation on which the columns stand); in the relationship between the diameter of the columns and the space between them; in that between the height and the width of the temple; and in that between the numbers of columns on its shorter and longer sides (8 : 17).

The columns of the Parthenon are unusually slender; they are set more closely together than is generally the case, and support a lighter entablature, or superstructure. The space between the columns and the walls of the temple is abnormally narrow (less than one-and-a-half times the distance between the columns themselves) while a second row of columns at each end of the building give the impression that it has a double peristyle.

This dense construction on the outside of the temple contrasts with the space and calm of the interior, whose amplitude is underscored—in the *cella,* or principal chamber—by a transversal row of columns.

The feeling of life inspired by the Parthenon, the sense that it is indeed a living organism, are due to two series of refinements: the subtle adjustments made to its horizontal lines, which curve, and to its vertical lines, which are inclined.

In fact, the horizontal lines of stylobate, epistyle (architrave), cornice and pediments alike are all slightly curved. The stylobate, for example, which one would expect to be a level foundation for the columns, is not really level at all, but rises in a gentle bulge (0.11 m.) in the centre of each side and 0.06 m. in the middle of each end.

The walls and columns, instead of being strictly vertical, are inclined slightly inwards. The columns at the sides and the ends lean inwards to a distance of 7 cm., while those at the corners—since they are inclin-

Photo © Tombazi, Athens

Photo Dominique Roger-Unesco

ed diagonally—lean inwards to a distance of 10 cm. The inner face of the walls inside the colonnade is vertical, but the outer face is similarly inclined. Thus, the volume of the temple, instead of being contained by parallelograms, is shaped like a truncated pyramid.

When we realize that each building block was trapezoidal and not rectangular in shape, and that almost every one of them had its own specific dimensions, since the curving of the horizontal lines and the inclination of the verticals create different angles and surfaces throughout the building, the skill required to transform these subtleties of design into reality is well-nigh unbelievable. If the architects of the Parthenon were men of genius, the craftsmen responsible for the execution of the project had to work with the highest degree of precision, calculating each element in the minutest detail.

The sculptures which decorate this matchless piece of architecture are probably the work of Phidias himself, helped by his two closest collaborators, Alcamen and Agoracritos. The decorations are both grandiose and original; those on the eastern pediment represent the birth of Athena in a composition which combines strength with nobility. Those at the western end relate the Attic legend of the contest between Athena and Poseidon (the sea-god) for possession of the city.

The 92 square metopes above the colonnade illustrate four cycles of myths, involving the combats of Gods and Giants, of the Centaurs and the Lapiths, of Greeks and Amazons, and the capture of Troy. Pediments and metopes alike thus provided Phidias with the opportunity of re-telling, in a manner that was unique, the ancient myths of Athena and the land of Attica.

Inspired by the vision of Athenian democracy at the height of its glory, Phidias conceived the ingenious idea of immortalizing in marble the people of Athens themselves. He would portray for posterity the joyous occasion when the whole city—old men and boys, women and maidens alike—mingled with the gods for the great Panathenaic Procession, Athens' biggest festival, and climbed the Holy Rock with offerings and with the new saffron robe, the *peplos,* woven to drape the xoanon, an ancient statue of Athena carved from the wood of the olive-tree.

A friend of Pericles and of the philosopher Anaxagoras, Phidias believed that his representation of the old Attic legends should be accompanied by the new achievements of democracy.

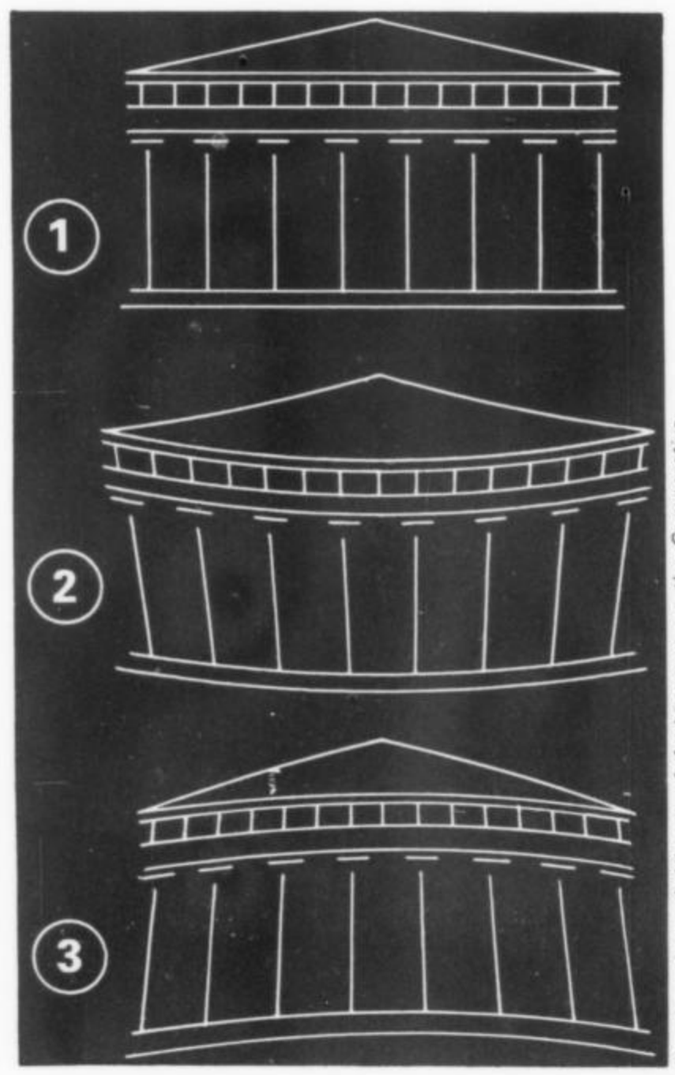
But Phidias was a sculptor, not an orator, and it is difficult to transform panegyrics into images. The task required all his genius, experience and audacity as one of the leading artists of his time.

The vision demanded a greater spread of space than pediments and metopes could provide; what was wanted for his composition was a continuous frieze. Boldly, Phidias decided to add to his Doric temple this element of the Ionic style, in the form of a band, 160 metres in length and 1.60 metres high, running round the temple walls.

This frieze should not be considered as a realistic portrayal of the Panathenaic procession. The composition is above all a poetic one, the translation of a sacred occasion into plastic terms. "Real" space and "real" time have been abolished here: the participants in the Panathenaea advance with a rhythm imposed by the sculptor in an environment of "poesy". The procession becomes a symphony, in the musical sense of the term. Reality, religion and art are interwoven.

As if following the procession in space and time, Phidias sets its beginning at the southwest corner of the temple, and takes it round the building to the east door. But this is really a pretext for the movements of his symphony, which opens *pianissimo,* with simple harmonies and the introduction of the major themes such as the rearing horse on the eighth carved slab of the western end and the escort of horsemen on the north and south sides of the temple.

On these carved slabs, the art of sculpture in relief achieves perfection: six or seven horsemen are represented with remarkable clarity on different planes. The rhythmic procession continues towards the centre of the east end, where the Gods have already arrived.



Drawings from *A History of Architecture on the Comparative Method* by Sir Banister Fletcher, New York, 1948.

The temple of victory

The elegant temple of Athena Nike (Athena Bringer of Victory) stands on a precipitous platform at the western edge of the Acropolis (far left). In Antiquity the temple was protected by a parapet of marble slabs executed in high-relief. The surviving slabs, which show scenes of winged victories at various tasks, include this graceful figure of Victory adjusting her sandal (left) Right, youth bearing an amphora, detail from the great Parthenon frieze in which Phidias depicted the Athenians in procession at the festival honouring the birthday of Athena.

Photo © Deutsches Archäologisches Institut, Athens

Although carved on a relatively small scale—they measure only one metre in height—the gods are impressive figures. Seated at ease, with ample space around them, they convey an atmosphere of freedom and well-being, as if in the surroundings of their distant home on Mount Olympus.

In the influence which he exerted on his own and succeeding ages, Phidias was to classical art what Pericles was to Athenian democracy. Under the imprint of his genius, the art of modelling transcended its limitations to become a vehicle for spiritual, religious and political messages of the highest order. It became the visible and eternal embodiment of divinity at its most imperceptible and transcendent, of man himself in full assumption of his responsibility and freedom and—finally—of the city at peace with itself, immune from both anarchy and despotism.

Opposite the Parthenon, on the north side of the Acropolis, stands the second of its most famous temples, the Erechtheum. Though dedicated to Athena Polias, the goddess of the city, the building was imbued with a religious significance that outstripped the limits of the traditional cult. It went deeper than the roots of the traditional faith into the soil of Attica, the medium which brought into communication with each other all the divinities and demons which presided over the destiny of the citizens of Athens.

From time immemorial, a temple had sheltered the xoanon, the wooden image of Athena which had supposedly fallen from heaven. The primitive cults of Attica were also worshipped there. The Persians had destroyed this ancient temple. Although Pericles had died before the work of reconstruction began in 421 B.C., it is certain that the plans for a new building worthy of the cults it was to house had been prepared, and the site chosen, before his death.

The new temple was constructed a little to the north of its predecessor, at a respectful distance from the Parthenon. Besides housing the most venerable cults of Athens —those of Athena and Poseidon—the temple included among its furnishings the tomb of Erechtheus (son of Gaea, goddess of the earth, represented as half-man, half-serpent) and the sacred serpent; and the tombs of Cecrops, founder and first king of Athens, and of the Athenians' earliest ancestors.

It also contained the mark where Poseidon's trident struck the rock so that a salt water spring known as the "Erechtheis sea" leapt from the cleft. Room had to be found not only for the altars of Zeus, Poseidon, Hephaistos, and the ancient xoanon of Hermes, but also for the city's sacred olive tree and the sanctuary of Pandrosos (daughter of Cecrops and priestess of Athena) containing the altar of Zeus Herkeios.

Despite all these difficulties, the resultant building, which resembles no other temple in Greece, was of a skilful simplicity that met all the above requirements.

Without departing from tradition, its architect was able to introduce a number of strikingly apt innovations, such as the elegant loggia which projects from the southern part of the temple, where the Caryatids courageously support the weight of the entablature without sacrificing any of their feminine grace and charming nobility.

The Ionic grace of the Erechtheum constitutes a discreet yet captivating pendant to the Doric power and splendour of the Parthenon. Centuries later, contemplating these eternally fresh examples of Attic art at its most glorious, Plutarch, one of the last of the ancient Greeks to appreciate his country's classic past, was to sum up the feelings they inspired as follows (from "Lives of the Noble Grecians and Romans", translated by Sir Thomas North, 1579. See also page 26):

"For every one of those works which were finished up at that time seemed then to be very ancient and yet it looketh at his daye as if it were but newly done and finished, there is suche a certaine kynde of florishing freshness in it, which letteth that the injurie of time cannot impaire the sight thereof: As if every one of those foresaid workes had some living spirite in it, to make it seeme young and fresh: and a soule that lived ever, which kept them in their good continuing state..."

■ **Manolis Andronicos**

Curves that look straight

These drawings of the east front of the Parthenon show techniques used by its architect to correct optical illusions.

1. The temple as it appears to the viewer. Its lines seem to be perfectly horizontal or vertical, though in fact they are curved and inclined as in figure 3.

2. The temple front as it would appear if it had been built as in figure 1 without optical correction.

3. The temple as it is actually built. The columns are inclined inwards: it has been calculated that if extended upwards they would meet 1,500 m. above ground level. The stylobate, architrave, entablature and pediment are convex, producing the optical impression shown in figure 1.

A citadel in praise of peace

by Alexis Diamantopoulos

THE Athenians began to build the monuments that can be seen on the Acropolis today shortly after they made peace with Persia in 449 B.C.

Thirty years before, the Persian King, Xerxes, had set out to conquer Greece. Twice during the Persian campaign, the Acropolis was captured and destroyed by fire: in 480 by Xerxes himself, and in 497 by his general Mardonius.

A year after the peace treaty was signed, Pericles, the leader of the democratic party and the most important figure in Athenian politics after Themistocles, called on all the Greeks to hold a conference at which they could decide jointly on the reconstruction of the shrines destroyed by the enemy.

This conference never took place, and the Athenians began the work of reconstruction on their own in 447 B.C. In 445 a Thirty-Year Truce was declared between Athens and Sparta and this favoured the rapid progress of the enterprise.

The first task was to rebuild the temple of Athena, the Parthenon. Work then began on the Propylaea, but it was interrupted by the outbreak of the Peloponnesian War between Athens and Sparta in 431 B.C. Lastly, the Athenians tackled the construction of the temple of Athena Nike and the Erechtheum, which they built on a site believed to have been occupied by the palace of the mythical King Erechtheus.

As both an official centre of worship and a citadel, as well as a place which evoked a large number of precious traditions, the Acropolis was of supreme importance to the Athenians. It was the ancient city, the immemorial seat of kings, demi-gods and strange legendary creatures like the dual figure of Erechtheus-Erichthonius, who was both man and snake.

In the 6th century B.C., it had been the seat of the "tyrant" Pisistratus and his successors. The chorus of old men in Aristophanes' comedy *Lysistrata* tells how the people of Athens ousted the tyrants with the help of the Spartan king Cleomenes I, and then expelled Cleomenes himself, who had set up a puppet government in their place.

In the *Lysistrata,* the people reminisce on these events with great pride, for at the time when the play appeared, in 411 B.C., democracy was in danger: the Athenians had just suffered a disastrous defeat in Sicily.

About a hundred years earlier, in 506 B.C., the young Athenian democracy had erected its first trophy in a prominent place beside the entrance to the Acropolis. The trophy took the form of a bronze four-horse chariot made from spoils abandoned on the battlefield by Athens' northern neighbours, the Bœotians, and by the Chalcidians, who shared the aristocratic ideology of Sparta

Photo Dominique Roger-Unesco

ALEXIS DIAMANTOPOULOS, *a specialist on ancient and modern Greek drama, is a professor at the drama school of the Greek National Theatre. The author of an authoritative study on Aeschylus's* Prometheus, *he has published many articles in the* Journal of Hellenic Studies *as well as in Greek and French learned periodicals.*

Photo © Deutsches Archäologisches Institut, Athens

THE GODDESS ATHENA was worshipped throughout the Greek world. Usually depicted with helmet, spear and shield, she was also the personification of wisdom and patroness of all arts and crafts. Head of Athena, above, is a detail from the Battle of the Giants, a group of figures that once adorned the Old Temple of Athena on the Acropolis (c. 525 B.C.). Only the foundations of the temple remain. Left, magnificent bronze statue of the goddess with outstretched hand was found in 1959 at the Piraeus, the port of Athens.

and had invaded Athens in a vain attempt to overthrow the new democracy.

It is significant that the inscription on the base of the chariot does not give credit for the victory to any specific military or political leader, but simply to the "sons of Athens". This is a rare example of a monument to victory that mentions no names, but only the anonymous soldiers who made the triumph possible. It expresses the pride which the people of Athens took in their newborn democracy, and its site reflects their profound love for the Acropolis, for their "city" as it was called in all simplicity by the chorus in the *Lysistrata.*

The Athenians had already revealed their devotion to the sacred place in 480 B.C., as they prepared to meet the Persian threat. As they waited for the enemy, they disagreed about the correct interpretation of the Delphic oracle, which had prophesied that they would be saved by "wooden walls". Herodotus tells how the old guard—elderly men who were still fit enough for battle to make things difficult for Xerxes—dug themselves in behind the wooden palisades of the Acropolis.

The other warriors followed Themistocles, agreeing with the view of the majority that the "wooden walls" referred to by the oracle meant the strong navy which the Athenians had mustered on Themistocles' advice during the previous ten years.

But before embarking on the triremes (galleys with three banks of oars) in which they were to serve as hoplites or ordinary foot-soldiers, the Athenian cavalrymen rode to the Acropolis and hung up their reins as an offering to the goddess Athena.

When the war was over, Themistocles, the architect of victory, made it his first priority to fortify the Acropolis. Even today, massive blocks of stone from the temples and shrines burned down by the Persians can be seen in the upper part of its northern wall. They served as a constant reminder of the conquerors' desecrations.

There were many reasons why military architecture should have been given top priority. In 477 B.C., a powerful alliance known as the Delian League was formed under the leadership of Athens. Initially the League was a purely defensive alliance, but it soon embarked on a policy of aggression and expansion which caused dissensions and led to armed confrontation between the allies.

There followed a six-year Egyptian campaign, during which the Athenians attempted at considerable cost to dislodge the Persians and gain control over that wealthy and fertile country. At about the same time, they came to grips with Sparta and her allies in a bid for hegemony over the whole of mainland Greece.

As a result of these military activities, the Athenians put all their efforts into fortifying the city. The most important of their projects was the construction of the Long Walls, which transformed the area stretching from the Acropolis in the west to the port of Piraeus in the south and to Phaleron in the north into one vast fortified triangle.

The fact that the Acropolis itself was neglected for over three decades after the great Greek victories and the Persian retreat is an indication of Themistocles' realism and efficiency in organizing and co-ordinating the economic, foreign and military policy of Athens. He saw that the best way to extend Athenian sovereignty was to consolidate Athenian sea-power.

This neglect of the Acropolis also reveals the extent of the ambitions harboured by the young men in Pericles' radical party who came to power in 462 B.C., after Kimon, the leader of the aristocratic party, had turned the Aegean into an Athenian sea after his victory at the River Eurymedon on the coast of Asia Minor in 468. These ambitions went far beyond the expansionist dreams and plans of their political predecessors, and they kept the city in a state of war against both Persia and Sparta for more than 10 years.

Athens finally made peace with Persia in 449 B.C., and with Sparta four years later. At last the Athenians could devote themselves to the reconstruction of the Acropolis.

Like Pericles' famous funeral oration in honour of the men who perished during the first year of the Peloponnesian War, but to an even greater degree, the Parthenon was the result of a passionate search for an act of faith. A similar search, informed by the same passion, took place during the same period in the Athenian theatre.

The monuments on the Acropolis and the great plays performed in the theatre of Dionysus at the foot of the Rock have often been presented as the artistic expression of a people at the height of its glory, demonstrating its pride in victory.

Yet it should be remembered that victory preceded the sculptural and architectural masterpieces on the Acropolis by more than 30 years—a whole generation. The history of this hard-working, tenacious generation and of their grim struggles between the Persian Wars and the "Thirty-Year Truce" with Sparta, reveals in much clearer perspective the meaning of the monuments built on the Acropolis during the Golden Age. For these monuments were, in fact, dedicated to the defeated as well as to the victors.

They undoubtedly reflect the victory over the Persians, which gave the Athenians the independence and power to restore on their city's sacred site monuments which expressed more perfectly than before their political freedom, their convictions and their aims.

But these monuments also reflect the Athenians' sense of defeat in their first headlong confrontation with history—a defeat that came after 50 years of military preparations and struggles, first for the survival of Athens and Greece as a whole, and then for the extension and consolidation of their civilization.

These long and arduous struggles seem to have filled the Athenians with amazement at the infinite prospects opening up

before them in their new role as masters of the Aegean Sea. But they had also experienced doubt and disappointment. So many projects had ended tragically, their outcome being left to the mercy of Chance, the new goddess of adventurers, rather than to knowledge and experience.

One cannot help wondering what the Athenian craftsmen, seeking as they did nothing less than perfection, must have thought of the disastrous blunders committed by the sorcerers' apprentices of the expansionist policy.

For all those magnificent artists and for the multitude of clear-sighted Athenian men and women, the Parthenon represented a kind of home-coming, a return to Ithaca after a nightmarish Odyssey outside the tranquil confines of traditional life. It was a return to a reality they could manage and control, using clean, hard materials they could trust, unlike the bloodstained, treacherous stuff of History.

For History had taught the Athenians some cruel lessons. There had been bloody, inglorious defeats, such as the disaster at Drabescus in 465 B.C., when 10,000 men, women and children (an enormous number, considering the population of Athens at the time) were sent to Thrace to found a colony and were virtually annihilated by the indigenous population.

There had been disasters in Egypt, where the Athenians fought for six consecutive years (460-454 B.C.). Disaster at Tanagra in Bœotia, where the Athenians were routed by the Spartans and Bœotians in 458 B.C. and suffered the humiliation of seeing their victors set up an arrogant memorial, in the form of a gold shield made from the Athenian spoils, on the newly-built temple of Olympia.

Disaster struck again in 447 B.C. At Koroneia in Bœotia, many Athenian volunteers—most of them scions of noble families—perished along with their general, Tomides, and Cleinias, the father of Alcibiades, in an ambitious attempt to extend Athenian sovereignty to the fertile regions on the mainland north of Athens.

Another spectacular failure had been the deterioration of relations between the Athenians and their allies in the islands and coastal regions of the Aegean. Many of these allies renounced their treaties with Athens and fought to regain their independence. The toll in human lives was high and opened a deep rift of hatred between the allied cities.

When their great victories over the Persian empire had opened the way to mastery of the Aegean, the Athenians had been faced with a difficult choice. Now they were seized with doubts as to the rightness of the historical course they had chosen.

Sculpture in marble is an austere art that admits no mistakes. As in politics, a false move cannot be erased. But the Parthenon was built by craftsmen who had complete mastery of their material and who could match the finished work to the design they had in mind with absolute precision. After the harsh lessons of History, these men must have felt a profound need for consistency and coherence.

The Parthenon was built in a spirit of ruthless perfectionism according to a plan that anticipated and forestalled any alterations that might prove necessary when it emerged on the actual site, and was confronted with the surrounding landscape, the horizon, the encircling mountains and the bright sunlight.

The Parthenon reveals the sense of poetry of the Athenian people, who found artistic and intellectual inspiration in the Attic countryside bathed in its unique limpid light.

But it also shows how the ordeal resulting from their society's radical change of direction and from the disasters caused by its expansionist dreams finally found expression in a passion for artistic perfection.

The monuments on the Acropolis express for all time that yearning for an end to the kind of historical opportunism and expansionist aberrations which Euripides castigates in the *Hippolytus,* when Aphrodite and Theseus wrathfully claim obedience from obstinate and foolish men.

The harmonious relationship between the Parthenon and its environment holds a lesson that impresses itself on the mind without rhetoric or exaggeration. It is noteworthy that the symbol to which the advocates of power politics attached most importance, the gold and ivory statue of the goddess Athena in full war attire, was hidden away in the inner part of the temple.

In seeking and achieving this harmonious relationship with the surrounding landscape, the inspired artists of 5th-century Athens were actually finding their way back to their origins, back to the reality which their own land offered them. The Parthenon and the other monuments on the Acropolis guided the Athenian back to his familiar horizon, enclosed by the islands of Aegina and Salamis, making him feel that what he saw before him was good and beautiful.

The Parthenon high on its rock and the tragic and comic poets in the theatre of Dionysus below each in their own way celebrated peace.

In 431 B.C., the year in which the Peloponnesian War broke out, Euripides praised in his *Medea* the rare gifts and incomparable destiny of the Athenians and their divine fortune in possessing such a land beneath such a sky. There is no mention of courage nor military valour, nor of great conquests.

Euripides simply celebrates the blessed land of Harmony and the nine Muses. This is no facile phrase-making but a confession of faith, the affirmation of a conscious choice, a vote for peace:

The people of Athens, sons of
  Erechtheus,
  have enjoyed their prosperity
Since ancient times. Children of blessed
  gods,
They grew from holy soil unscorched by
  invasion.
Among the glories of knowledge their
  souls are pastured;
They walk always with grace under the
  sparkling sky.
There long ago, they say, was born
  golden-haired Harmony,
Created by the nine virgin Muses of
  Pieria.

They say that Aphrodite dips her cup
In the clear stream of the lovely Cephisus;
It is she who breathes over the land the
  breath
Of gentle honey-laden winds; her flowing
  locks
She crowns with a diadem of sweet-
  scented roses,
And sends the Loves to be enthroned
  beside Knowledge,
And with her to create excellence in
  every art.
Then how will such a city,
Watered by sacred rivers,
How will Athens welcome
You, the child-killer
Whose presence is pollution?
Contemplate the blow struck at a child,
Weigh the blood you take upon you.
Medea, by your knees,
By every pledge or appeal we beseech
  you,
Do not slaughter your children!
  (translated by Philip Vellacott)

This choice is also apparent in the monuments of the Acropolis, in their conception, in their relationship to the landscape, in their every detail. It emphasizes the importance of the traditional way of life. The Panathenaic Procession on the frieze of the

Pericles as seen by Plutarch

Below, a bust of Pericles, the 5th-century-B.C. Athenian statesman. His achievement in building the Acropolis monuments was recorded in the Ist century A.D. by Plutarch, the Greek historian.

Photo : Bristish Museum, London

Photo Dominique Roger-Unesco

Skilful horsemanship was held in high esteem by the Athenians. At the city's Panathenaic Games, held in honour of Athena, jockeys showed their prowess in fiercely competitive horseback and chariot races. All the nobility of horses is expressed in this spirited head from a marble statue in the Acropolis Museum. It was carved by a Greek artist c. 490-480 B.C.

Parthenon is its most eloquent illustration.

Starting from the western side, the procession moves along the north and south sides to the eastern front of the temple where the gods sit peacefully, welcoming the Athenian citizens. No such democratic representation can be found elsewhere, at Olympia, for example.

Inside the temple stood Phidias' gold and ivory statue of Athena, the formidable ally of her people—colossal in proportion to the high ceiling, and therefore superhuman in the eyes of men. Outside, the gods, shown as rivals on the western pediment, are transformed on the eastern pediment and the frieze into peaceful subjects of the primeval Mother Earth, restraining man from the temptations of overweening pride and violence.

■ **Alexis Diamantopoulos**

"IT is no more than fair", Pericles told the Athenians, "that after Athens has been equipped with all she needs to carry on the war, she should apply the surplus to public works, which, once completed, will bring her glory for all time, and while they are being built will convert that surplus to immediate use. In this way all kinds of enterprises and demands will be created which will provide inspiration for every art, find employment for every hand, and transform the whole people into wage-earners, so that the city will decorate and maintain herself at the same time from her own resources."

Certainly it was true that those who were of military age and physically in their prime could always earn their pay from the public funds by serving on Pericles' various campaigns. But he was also anxious that the unskilled masses, who had no military training, should not be debarred from benefiting from the national income, and yet should not be paid for sitting about and doing nothing.

So he boldly laid before the people proposals for immense public works and plans for buildings, which would involve many different arts and industries and require long periods to complete, his object being that those who stayed at home, no less than those serving in the fleet or the army or on garrison duty, should be enabled to enjoy a share of the national wealth.

The materials to be used were stone, bronze, ivory, gold, ebony, and cypress-wood, while the arts or trades which wrought or fashioned them were those of carpenter, modeller, coppersmith, stone-mason, dyer, worker in gold and ivory, painter, embroiderer, and engraver, and besides these the carriers and suppliers of the materials, such as merchants, sailors, and pilots for the sea-borne traffic, and waggon-makers, trainers of draught animals, and drivers for everything that came by land.

So the buildings arose, as imposing in their sheer size as they were inimitable in the grace of their outlines, since the artists strove to excel themselves in the beauty of their workmanship. And yet the most wonderful thing about them was the speed with which they were completed. Each of them, men supposed, would take many generations to build, but in fact the entire project was carried through in the high summer of one man's administration.

On the other hand we are told that when Zeuxis the painter once heard Agatharchus boasting about how swiftly he painted his figures, his retort was, "Mine take, and last, a long time".

Certainly mere dexterity and speed of execution seldom give a lasting value to a work of art or bestow a delicate beauty upon it. It is the time laid out in laborious creation which repays us later through the enduring strength it confers.

It is this, above all, which makes Pericles' works an object of wonder to us—the fact that they were created in so short a span, and yet for all time. Each one possessed a beauty which seemed venerable the moment it was born, and at the same time a youthful vigour which makes it appear to this day as if it were newly built. A bloom of eternal freshness hovers over these works of his and preserves them from the touch of time, as if some unfading spirit of youth, some ageless vitality had been breathed into them.

The Propylaea, or portals of the Acropolis, of which Mnesicles was the architect, were finished in the space of five years. While they were being built, a miraculous incident took place, which suggested that the goddess Athena herself, so far from standing aloof, was taking a hand and helping to complete the work.

One of the workmen, the most active and energetic among them, slipped and fell from a great height. He lay for some time severely injured, and the doctors could hold out no hope that he would recover.

Pericles was greatly distressed at this, but the goddess appeared to him in a dream and ordered a course of treatment, which he applied, with the result that the man was easily and quickly healed. It was to commemorate this that Pericles set up the bronze statue of Athena the Healer near the altar dedicated to that goddess, which they say was there before.

But it was Phidias who directed the making of the great golden statue of Athena, and his name is duly inscribed upon the marble tablet on the Acropolis as its creator. Almost the whole enterprise was in his hands, and because of his friendship with Pericles all the artists and craftsmen came under his orders.

From "The Rise and Fall of Athens" by Plutarch, translated by Ian Scott-Kilvert (Penguin Classics 1960) pp. 178-180. Copyright © Ian Scott-Kilvert 1960. Reprinted by permission of Penguin Books Ltd.

1 Nashville, Tenn. (U.S.A.)

Photo © Pana-Vue, U.S.A.

2 Munich (Federal Republic of Germany)

Acropolomania

Ancient Greek architecture suddenly came back into vogue around 1815-1820. From then on up to recent times, the style known as "neo-Greek" was used in many public buildings, particularly in Europe and the United States. On this page we present examples of these monuments, some faithful copies, some pastiches of Athenian models.

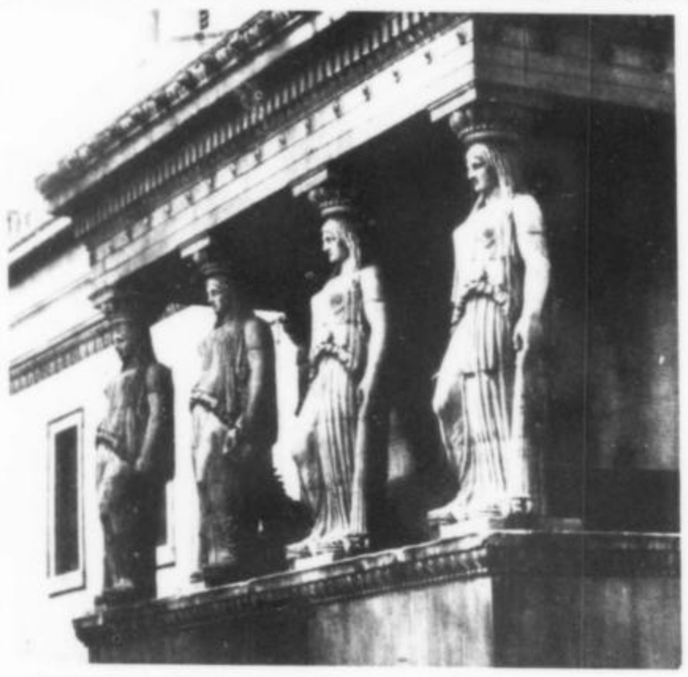
Unlike the "neo-Classical" style in favour in the 18th century, the neo-Greek style relied on precise archeological data. The Parthenon in Nashville (photo 1), inaugurated in 1931, is an exact-size replica of the original building.

Pierre-Yves Balut, a French art historian teaching at the Sorbonne University in Paris, is making a compilation of these buildings. Some of them, he notes, display "a return to ancient techniques and aesthetic canons, both of which have been studied in detail and perfectly reproduced."

The Munich Propylaea (photo 2), built between 1832 and 1862, even include a reproduction of the pathway that the ancient Greeks had been obliged to dig through the steeply sloping side of the Acropolis so that the chariots in the Panathenaic Procession could pass. For the Walhalla at Ratisbon (photo 3), erected between 1830 and 1842, the builders even imitated the ancient Greek technique of stone-fitting without mortar.

The Caryatids of St. Pancras Church in London (photo 4), those of the Faculty of Medicine in Paris (photo 5) and those of the Parliament in Vienna (photo 6) are a far cry from the perfection attained in Antiquity. Yet perfect or not, these neo-Greek buildings testify to what Mr. Balut calls "the eternal fascination in the West for the long-lost days of its infancy"

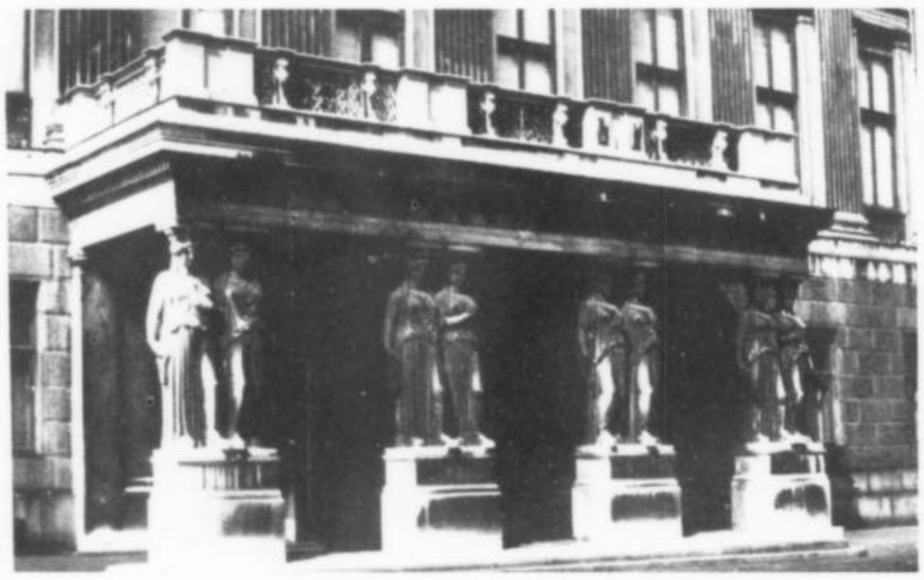
3 Ratisbon (Federal Republic of Germany)



4 London (U.K.)

Photo © Luc Joubert, Paris

5 Paris (France)



Photos © Pierre-Yves Balut, Paris

6 Vienna (Austria)

Village life among the ruins

A cluster of roofs surrounds the blasted shell of the Parthenon in this early 19th-century depiction of the Acropolis by the English traveller Edward Dodwell. The temples of antiquity, half-buried in rubble, are lost in a maze of village lanes. In 1833, a local figure complained: "The archeologists will destroy all the picturesque additions (to the Acropolis) in their zeal to lay bare and restore the ancient monuments."

by Jacques Lacarrière

Photo © Agora Excavations, Athens

IT is a curious fact that for many centuries, from the twilight of Antiquity till the dawn of the Romantic Age, the Acropolis was quite absent from the mind of Western man, his images, his dreams and his memory. It was lost in a limbo as distant as the days before the Flood, as remote as the caverns which echoed our ancestors' first cries and darker than the darkest ages of history; lost in a "black hole" in time like those which modern astronomers are discovering in space.

During the long period before its discovery, or rather, rediscovery, the Acropolis did not, of course, really cease to exist. On the contrary, old engravings and the tales of the earliest travellers show it to be a busy, crowded place, cluttered with houses, with churches and—at a later date—with mosques.

There on the Rock, in a hubbub of histories, customs and facades, so different from today's bright emptiness, a bustling population of Greeks, then Turks, Armenians and Albanians lived out their lives and loves. For hundreds of years, these "Acropolitans" (a name we may give them for the sake of simplicity) were its only occupants.

A number of engravings, which deserve to be better known, reveal to us this long-lost age, and tell its strange, forgotten story. Let us look, for example, at those made from drawings by "Athenian" Stuart, from Edinburgh, and the Englishman Revett, who travelled together in Greece between 1751 and 1753, and who saw the Acropolis in the state we have described.

A patchwork of houses, stitched with narrow, winding lanes, and gardens graced with olive and mimosa covers the whole site, from the Propylaea at its entrance to the far end of the Parthenon, which is itself hemmed in by walls and screened with branches. Inside the temple gleam the cupolas of a Turkish mosque; it will remain ▸

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there for many years to come, and only disappear in 1842.

Another engraving shows the Erechtheum, and beyond it a large house, from whose walled courtyard prods a single cypress. The ancient temple seems to have become a place of meditation: under its porch—lower than it is today because not yet excavated—an Acropolitan sits cross-legged and gazes dreamily at the sky. Close at hand, in the streets and square of what might be a village, stroll men in turbans; children play, dogs sniff, and a horseman crosses in the background.

Fifty years later, in 1805 or thereabouts, when Edward Dodwell, another English traveller whose remarkable series of *Views in Greece from Drawings* will be published in London in 1821, paints the Acropolis, the scene has hardly changed. The houses on the Rock are still set in walled courtyards shaded by olive trees and slender cypresses. A large building (a barracks or a warehouse?) flanks the north side of the Parthenon. Turkish noblemen and shepherds idle the hours away under the dazzling Attic sunlight, its brilliance stippled with the red of tiled roofs.

Now there can be no mistake: this is indeed a village and not a temple or a shrine—a real village, captured by the painter in its hours of bustle and of sun-drenched silence, with its braying, bleating animals, its market, its bazaar. Here, now, the ancient gods are dead beyond recall; the only remaining trace of their presence is in these half-buried columns, these toppled marble heads and busts which the Acropolitans sometimes use as seats.

Many other pilgrims saw and described the Acropolis thus transmogrified: the Oriental village, the improvised fortress, the bazaar littered with marble blocks and statues. Their accounts and their engravings all tell the same reassuring and yet melancholy story.

They tell us that the Acropolis was not lost to history throughout all these obscure centuries, but that it humbly survived, as village, citadel and market-place; that the Parthenon was saved from abandon and ruin to become a church dedicated to the Mother of God, and then a Turkish mosque.

They tell us that a daily life that was first Greek and then Turkish in content, first Christian and then Muslim in belief, persisted on the Holy Rock of the Ancient Greeks, in the stronghold of the Byzantines and in the fortress of the War of Independence.

I like to think that in this way, throughout a long history that has been sacred as well as profane (since gods, or a single God, have always been worshipped there), the Acropolis has remained true to its ancient vocation, nurturing in its own way the same sacred and profane spirit that moved with the crowds through its statue-lined streets, among its altars and its trophies, during the Golden Age of Pericles.

Today's Acropolitans are the tourists. Archeology is the new faith and archeologists are the priests of the new cult. After so many centuries of obscurity, I cannot but reflect on the strange destiny of a site which—resurfacing barely a century ago in Western consciousness, re-emerging as the birthplace of Reason after 25 centuries of neglect—is once again threatened.

Although it served as market-town, fortress and refuge for religions, and although its ruins remained eloquent, the Acropolis was for so long a backwater, leading a withdrawn, meditative and provincial life.

Today, as a place of pilgrimage for those in quest of culture, it retransmits the newly transparent message of the ages, the time-worn brilliance of its marbles, the purity of this flat-topped hill, to which excavations and the clearance of rubble have restored the naked virginity of its primeval rock (yellowed in autumn by tufts of camomiles—for there are flowers on the Acropolis for those who know where to look). But there is also the thoughtless immoderation of its crowds of visitors....

Although the long silence has suddenly been broken by tumult, the Acropolis remains an enigma, questioning us as the Sphinx questioned Oedipus. Whether we look at it at dawn, at midday or in the evening twilight, whether we contemplate the interplay of light and shadow at the beginning or the end of things, we seem to hear the same voice quietly asking: "Who built me as the sun rose on the Western world? Who perfumed me with incense as it passed through the zenith of Reason? Who protected me during the twilight of my gods?"

"Man", is the answer. And not only Attic man, but man come out of the East, and out of the West, to live together, throughout all the forgotten centuries, on this incomparable rock.

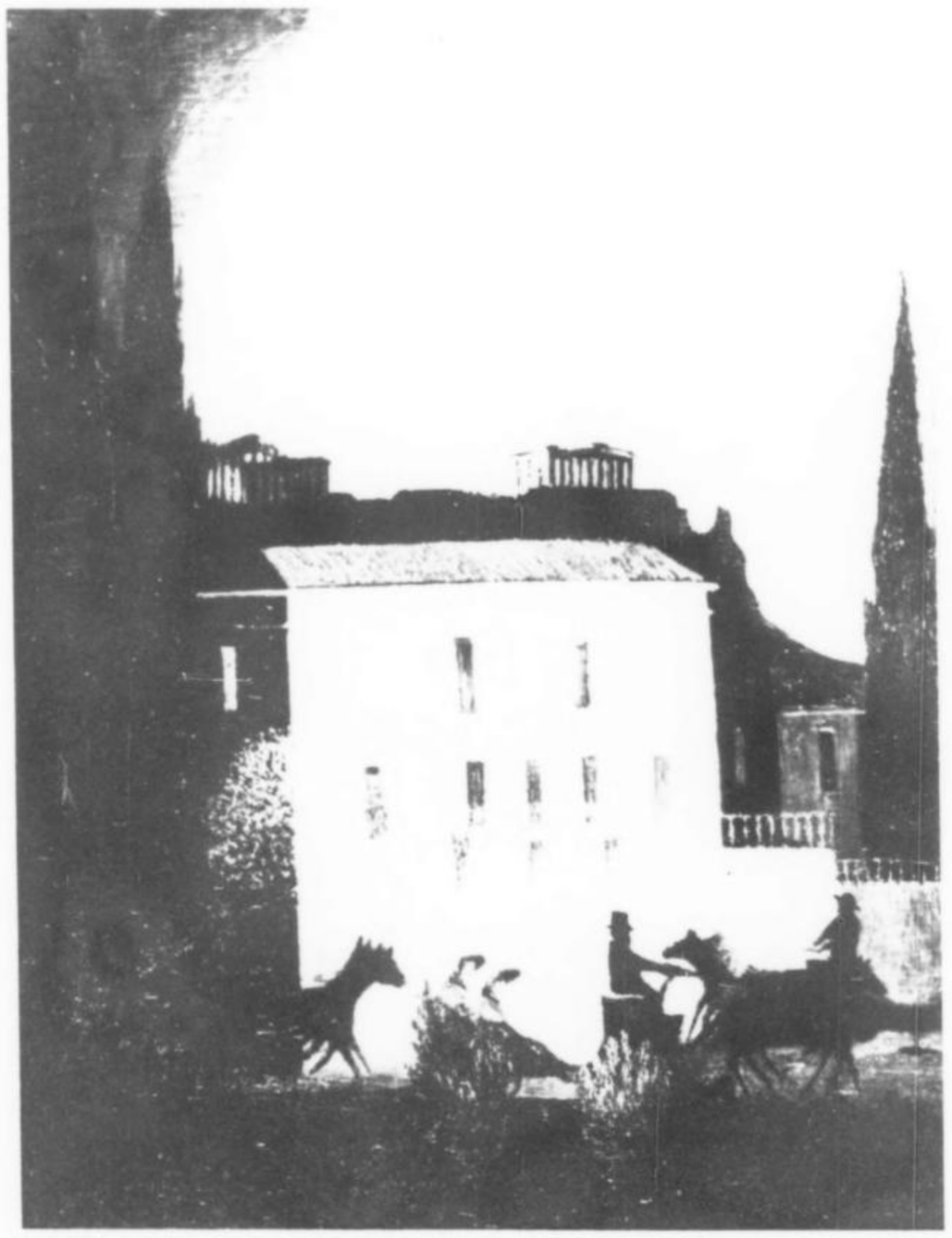
The monument of the Acropolis which has always been my favourite is the little temple of Athena Nike (the Giver of Victory), which stands at its westward end, facing the sea and the setting sun.

Once, it sheltered a statue of the goddess, carved from an olive trunk, standing upright, holding out in her right hand a fruit, a pomegranate. This statue no longer exists; it had already disappeared when the rock was occupied by the Acropolitans of our story.

And yet it is in this long-lost statue that I see the clearest and most lasting symbol of the essential agelessness of the site and of the rock: this Victory carved from an olive-tree, offering to all eternity the most ephemeral of fruits.

This symbol, too, the olive-tree grafted by human hands, this gesture of offering, of certainty and light, is part of the heritage of all mankind.

■ **Jacques Lacarrière**



In this work executed by the Hungarian painter Csontvary around the beginning of the 20th century, the Acropolis forms a picturesque backdrop to a scene of elegant ladies visiting Athens in a horse-drawn carriage.

Aristotle

An architect of modern thought 2,300 years ago

by Constantine Despotopoulos

MORE than any other thinker, Aristotle has influenced philosophical and scientific thought in Europe, in the non-European countries of the Mediterranean basin, and in all those whose cultures are fashioned on European lines.

This influence, whether direct or indirect, has been felt by thinkers as diverse as Karl Marx, who admired Aristotle's work, and the French philosopher Henri Bergson, who described his great predecessor's metaphysical theory as that which most closely reflects the nature of the human mind. For centuries, philologists, philosophers and historians have studied Aristotle's writings from every possible angle. The bibliography of Aristotelian studies, already enormous, still continues to grow.

This is mainly due to the extraordinary diversity of Aristotle's work, which represents an essential phase in the development of ancient Greek thought, to which it brought a new scientific dimension. To a great extent, this work has shaped or crystallized philosophical problems, concepts and terms for all succeeding generations, and has made a decisive contribution to the development and indeed the creation of a number of scientific disciplines. Finally, it constitutes the first methodical attempt to organize morals and law into a philosophical system and to lay the foundations for a scientific examination of politics.

Seen at a distance of so many centuries, Aristotle's writings may appear to us as something to be taken for granted, an intellectual treasure of which we happen to be the fortunate beneficiaries.

Yet this great body of work was brought forth arduously and gradually, following a pattern that remained consistent despite frequent fluctuations and digressions. It was produced by a man of genius who was also a tireless worker, in the course of a life that was marked by ordinary human vicissitudes such as family losses, personal disappointment and bitterness, but which was also enhanced by the support of loyal friends, by constant contact with Plato, the supreme philosopher of ancient Greece, and by the stimulating collaboration of chosen disciples.

Aristotle was born in 384 B.C. in the small Greek colony of Stagira on the Chalcidic peninsula of Macedonia in northern Greece. He spent his childhood in Pella, where his flather, Nicomachus, was court physician to Amyntas II of Macedon. He lost his father at an early age, and at 17 left for Athens, the centre of Greek civilization.

Photo Roger Viollet, Paris

Bust of Aristotle in the Capitol Museum, Rome

In Athens he acquired the rich experience of living in a multi-faceted society, acquainting himself with all its political, economic and cultural currents. Above all, he familiarized himself with the Attic use of language, which the orators and teachers of rhetoric then cultivated almost to excess, but which was a magnificent vehicle for contemporary judgements and observations concerning human values.

This was the period when the Academy, the school of philosophy founded by Plato, flourished in Athens. At the time of Aristotle's arrival, Plato was absent in Sicily and the Academy was provisionally headed by the astronomer and philosopher Eudoxus of Cnidus. Aristotle became an active member of the Academy, where he was to spend 20 years of his life, from 367 to 347 B.C.

During this long and fruitful period, Aristotle lived in close contact with Plato and other eminent thinkers and received continuous intellectual stimulation from his association with them. He soon distinguished himself for his acute intelligence and passionate thirst for knowledge, for his vigorous mind and dialectical prowess. Most important of all, he finally emerged as a totally original and independent thinker.

After Plato's death, Speusippus became head of the Academy. Aristotle decided that it was time to leave Athens. He departed, somewhat embittered at not being appointed Plato's successor, and settled in Assus, a little town in the Troad, in northwest Asia Minor. There, in collaboration with several other Platonists, he founded his first school, as a kind of annex to the Academy.

He taught in Assus for three years (347-344 B.C.) and then moved to Mytilene on the nearby island of Lesbos. There he worked for two years on biological research with Theophrastus, a native of the island, and also pursued his other studies, particularly in the field of logic.

At the invitation of King Philip II of Macedon, son of Amyntas II, Aristotle left Mytilene in 342 B.C. to return to the court at Pella, where he was entrusted with the education of Philip's heir, the future Alexander the Great, then a 13-year-old boy. For three years Aristotle concentrated on this task and then, from 340 to 335 B.C., devoted himself more fully to his own research and writing.

The year 335 B.C. marks the beginning of the most important period in Aristotle's life. Once again he settled in Athens, and ▸

CONSTANTINE DESPOTOPOULOS, *an authority on the philosophy of Aristotle and Plato, is a professor at the Panteios School of Political Science in Athens.*

founded his second school, the Lyceum, where for the next 12 years he proved to be an admirable teacher, a great philosophical innovator, a creative scientist and an incomparable organizer of methodical enquiry by teams of scientists and scholars.

During this time he completed his many-sided contribution to human thought and gave final form to his writings, which were to serve through the ages as a landmark for those seeking to establish the fundamental principles of intellectual activity.

In 323 B.C., there was a violent outburst of anti-Macedonian feeling in Athens. Aristotle suffered a certain amount of persecution and escaped to Chalcis, his mother's birthplace, leaving both the school and his manuscripts in the care of Theophrastus. He died in Chalcis a few months later, a sad and lonely man (1).

Content apart, the sheer quantity of Aristotle's writings constitutes an amazing achievement. The most important of his surviving works, which represent barely one-quarter of his entire output, deal with many branches of human knowledge, including logic, physics, biology, metaphysics, morals, politics and psychology.

The idea that population growth should be controlled in the interests of balanced economic development is often thought to be a modern one. However, it was foreshadowed, 2,300 years ago by Aristotle, who declared in his *Politics* that overpopulation caused poverty, crime and other social evils.

Drawing Rauch, La Hunière, Paris

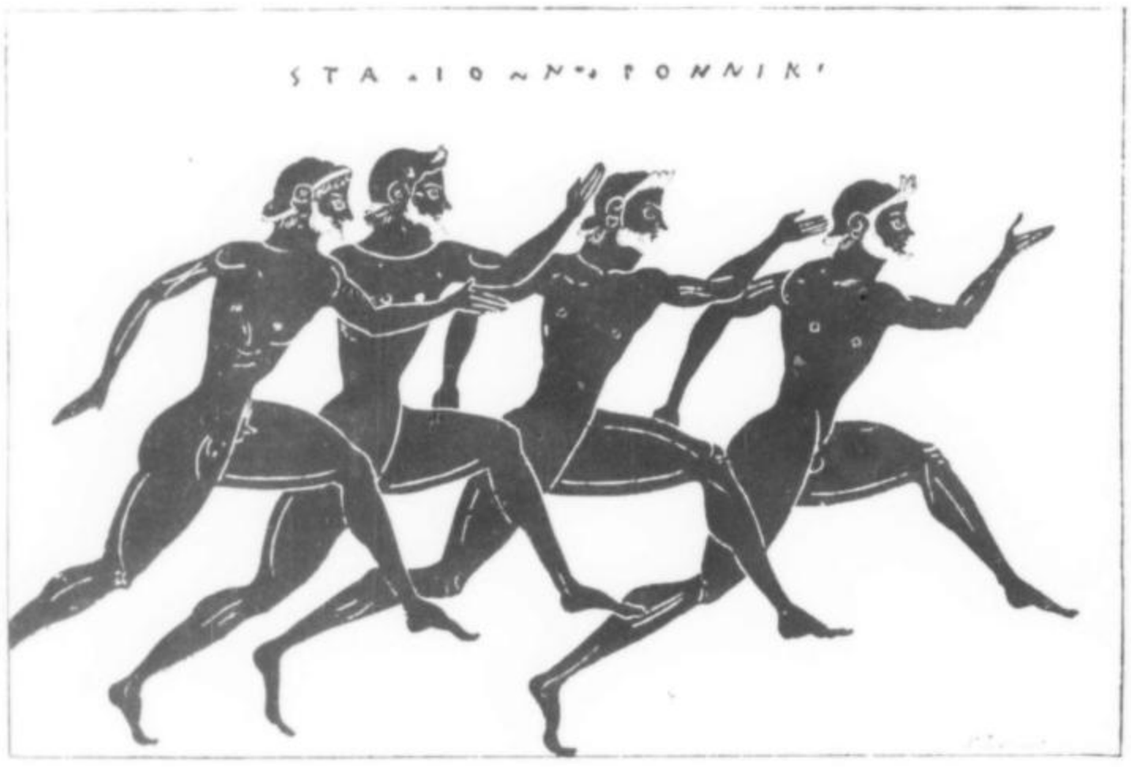


Photo Robert Laffont publishers
Paris-Metropolitan Museum of Art, New York

Universal education is another "modern" idea discussed by Aristotle in his *Politics* in the 4th century B.C. He stresses that education must prepare the citizen to use leisure, for a state that cannot use its leisure properly will collapse. Above, athletes on a Greek vase.

It is generally accepted that his greatest achievement was the decisive contribution which he made to logic. Not only did he re-examine, supplement and classify his predecessors' discoveries in this field, he also enriched them with his own discoveries and finally organized the existing body of knowledge on the subject into a complete philosophical science.

Aristotle's works on logic deal with human thought not only at the scientific level but also in relation to everyday life. They are divided into two parts, the analytical (which is the more important) and the dialectic. *The Analytics,* which deals principally with reasoning and logical demonstrations, has made an invaluable contribution to the methodology of the exact sciences. The balanced construction of Euclidean geometry owes much to Aristotle's *Analytics.*

However, the "Father of Logic" was fully aware that reasoning cannot cover the entire field of the cognitive process, (that is, the action and faculty of knowing) and that the knowledge of first principles, on which we base our judgements and therefore our reasoning, is obtained by a direct process which is based less on reasoning than on a kind of intuitive vision.

For Aristotle, reasoning is not the sole method of enquiry into philosophical and scientific problems. He also uses observation, analogy and the historical-evolutionist method.

When investigating a philosophical problem, he prefers to begin by analysing the meaning of words and then proceeds to an analysis of the subject, including an exposition of views contrary to his own.

Aristotle's work in the field of physics is held in lesser esteem today, despite its undoubted importance. Here he is concerned with "natural" beings, in other words those which are endowed with the capacity for motion, whether in the spatial sense, or through increase or decrease, or through mutation. Such beings include animals, plants and the four "simple bodies" — earth, fire, air and water.

These four elements serve as a starting-point for Aristotle's explanation of a number of changes affecting corruptible natural beings, without however presupposing any strict teleology — the doctrine that final goals and purposes rather than mechanical causes order reality. According to Aristotle, nature is not to be considered equal to matter. It is both "daemonic and divine."

In his desire to place physics on a sturdy theoretical foundation, Aristotle studied with almost mathematical rigour the infinite, the void, the continuum, space, time, motion and energy. He formulated bold theories, especially concerning the problem of time, which were to exert a fruitful influence on later thinkers such as Newton, Husserl and Bergson.

He also considered the possibility that the earth might be spherical in shape. A passage in one of his works is believed to have encouraged Christopher Columbus to follow a westerly course in his attempt to reach the Indies.

Eminent modern biologists have expressed their admiration for Aristotle's contribution to the development of this science. Darwin described Linnaeus as a mere apprentice in comparison with Aristotle, whose biological treatises list 500 different varieties of animals and include a wealth of information on comparative anatomy and

(1) In 1978, the Greek government plans to commemorate the 23rd centenary of Aristotle's death by organizing a world congress on "Aristotle and Contemporary Thought".

embryology, as well as the principles of physiology.

The notion of "organism" appears for the first time in Aristotle, and the generation of life is given a teleological interpretation, based on the concept of entelechy, the realization or complete expression of potentiality.

The soul is considered as a life-giving principle, the basic condition for existence in living beings. It both shapes and sustains the organism, and generates and directs motion and sensation, volition and mental energy.

Aristotle makes a distinction between a merely "nutritive" soul, such as exists in plants, a sensitive soul which coexists with the nutritive soul in animals, and a rational soul coexisting with the former two in human beings.

As for psychology, Aristotle was the forerunner of theoretical trends which were to emerge in later times in the work of such thinkers as Kant and Fichte and the founders of configurative and associative psychology.

Among the principal concepts introduced for the first time in his theory of psychology are the passions, the faculties or dispositions, sensation, appetite, the intellect, desire and volition.

Aristotle's study of morals is the product of a critical elaboration of the moral beliefs held by the Greek people and scholars of his time, and the integration of these beliefs into his own psychological and metaphysical concepts, combined with a philosophical enquiry into man's practical functions.

The basic concepts of this open-ended system are: the good, happiness, virtue, and moral choice—a notion which presupposes freedom in a very practical sense. Happiness is defined as "the activity of the soul in a state of virtue", in other words as a condition closely related to freedom, though dependent on the individual condition determined by the circumstances of a person's life.

Aristotle's theory of law exerted a profound influence on Roman, late medieval and modern jurists, particularly his notions of distributive law, corrective law, contract, retaliation and leniency. Moralists and jurists were also much influenced by Aristotle's theory concerning the family.

In his *Politics,* Aristotle put forward the notion that man is by nature a political animal, thus implying that society, in the political sense, is not an artificial product but the outcome of something inherent in human nature. His use of the citizens' common interest as the supreme criterion in distinguishing "good" from "bad" societies emphasized the interdependence of society and justice.

Aristotle's *Politics* became widely known in Western Europe in the late Middle Ages and made a decisive impact on modern political science. Political theories and concepts such as the state, law, forms of government, the citizen, politics as the art of the possible, the separation of powers, the antagonism between rich and poor, can all be found in Aristotle.

The *Poetics,* only parts of which have survived, deals mainly with the subject of artistic creation considered as an imitation of nature by means of form, colour, sound, motion and words.

Since the Renaissance, it has proved a major influence on literature and literary criticism. His definition of tragedy, in particular, which features the celebrated notion of *catharsis* (purification), has provided a stimulating source of debate and comment among many poets and critics.

However, Aristotle's greatest work is his *Metaphysics,* the main subject of which is the nature of being, which he presents as an inexhaustible source of conjecture for the human mind.

This fundamental philosophical work, which nurtured the philosophy of medieval Europe, as well as Arabic philosophy (with certain variations), still provides the groundwork for the philosophical doctrine of the Catholic Church. In it, Aristotle advanced such important dual concepts as form-and-matter and potentiality-and-actuality, the first designating the structure of each being and the second the movement of each being towards realization.

He also posited and envisaged such eschatological problems as the generation and corruption of beings as opposed to the eternity of the world; the first cause and the principles which activate the world; and finally the fundamental concept of human conscience which Descartes was to formulate many centuries later when he wrote: "Cogito, ergo sum" (I think, therefore I am).

■ **Constantine Despotopoulos**

Letters to the editor

RUBENS AFTER FOUR CENTURIES

Sir,

The issue celebrating the 400th anniversary of Rubens' Birth (June 1877) would have been a boon for philatelists, if only you had devoted more space to the stamps issued in the great painter's honour (page 18).

Perhaps readers would be interested to know that the U.S.S.R. Ministry of Posts and Telecommunications has issued a series of stamps in honour of Rubens consisting of a sheet and 5 separate stamps. The 5 stamps show works by Rubens in the Hermitage Museum, Leningrad: "Alliance of Earth and Water", "The Carters", "Lion Hunt", "The Rainbow" and "Portrait of a Lady" (shown here). On the sheet are a Rubens self-portrait with (at left) a detail

from "The Statue of Ceres" and (below) a panel containing the inscription "400th anniversary of Rubens' birth".

L.V. Vasiliev
Philatelic Society of the U.S.S.R.
Moscow

SOLAR ENERGY FOR THE THIRD WORLD

Sir,

Erik P. Eckholm's article on the poor man's energy crisis caught my attention in your excellent issue entitled "A Halt to Desert Advance" (July 1977).

There is a shortage of firewood in many regions of the world, but there seems to be no shortage of strong sunlight. This suggests a possible remedy.

Why not introduce domestic solar cookers in these regions? Given current advances in technology, this should be possible. If the project was successful, it would relieve the poor of the Third World of the heart-breaking search for firewood and give the forests a chance to grow again.

Finally, I believe that any notion of profit from such an invention for the poor of the Third World should be ruled out. The reward may lie in this quotation from the Prophet Isaiah: "Then shall the light rise up in darkness and thy darkness shall be as the noonday."

Seán O. Cadhla
Cork, Ireland

Sir,

I am 86 years old, but I still think about the future and so I was particularly interested by Erik Eckholm's article drawing attention to the alarming rate at which wood is being used up in some parts of the world.

It is hard to know how to brake the massive consumption of wood as a heating fuel in the poor regions of Asia, Africa and South America. However, in some of these regions which have a sunny climate, sunlight could replace wood as an energy-source. Parabolic reflectors could be mass-produced for this purpose, possibly in duralmin. In spite of the costs involved, this would be a vast improvement on the wholesale destruction of trees.

L. Paillard
Vertus, France

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Unesco calendar for 1978

Unesco is preparing a 1978 calendar (40 cm × 36 cm) showing 12 views of the Acropolis or works of art inspired by it. Profits from the sale of the calendar, published by Siebdruck Sud of Leonberg-Eltingen (German Fed. Rep.), will go to Unesco's programme for the conservation of the cultural heritage of mankind. The calendar, which is to appear in several language versions, will be available in October 1977. For details concerning price and points of sale, please write to Unesco Philatelic Service, 7 Place de Fontenoy, 75700 Paris.

Prehistoric find in Siberia

A baby mammoth has recently been discovered beneath the permafrost of Siberia, where it has been preserved in almost perfect condition for more than 10,000 years. The mammoth, an extinct form of elephant, flourished between 2 1/2 million and 10,000 years ago and was hunted by cave men. The find, reported by Dr. Kartashov of the Leningrad Institute of Geological Sciences, has been taken to Leningrad for preservation and study.

New international journal on natural resources

A new U.N. quarterly, "Natural Resources Forum", is devoted to the economic, scientific, technological and policy aspects of energy, minerals and water resources. The first 4 issues have examined such major questions as the planning and management of water resources in developing countries and the collection and dissemination of information on natural resources. "Natural Resources Forum" is published in English on behalf of the U.N. by D. Reidel Publishing Co., Dordrecht, Holland. (Subscription for one vol. of 4 issues: $34.00; special reduced rate for private persons: $17.00. These rates include postage and handling).

First earthquake prediction conference

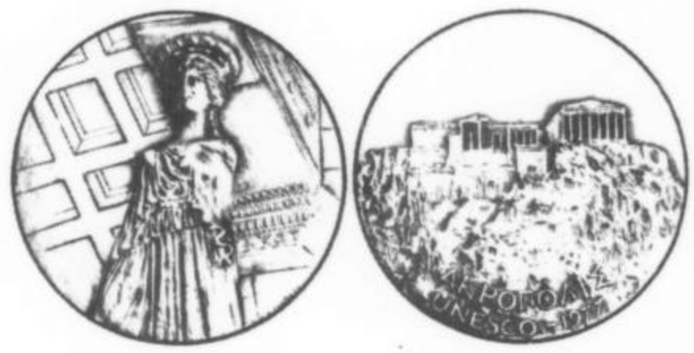
An international conference on earthquake prediction — the first of its kind — will be convened by Unesco in 1979. Among the topics to be discussed will be methods of prediction, natural warning signs, how to publicize predictions, and also the possible economic and social consequences of disaster warnings.

"Save the Acropolis" — a new Unesco film

"Save the Acropolis", a Unesco 16 mm colour film, evokes the art and achievements of the Golden Age of ancient Greece and shows why the Acropolis should be saved from the dangers threatening both its architecture and the rock itself. The 27-minute film, written and directed by Jehangir Bhownagary, is available in English and French language versions. German, Russian and Spanish versions are in preparation. For further information, please apply to the Press and Audio-Visual Information Division, Unesco, Place de Fontenoy, 75700 Paris.

Unesco medal for the Acropolis

Unesco has issued a medal to enable people to contribute to the international campaign to save the monuments on the Acropolis. Featuring a



general view of the Acropolis and, on the reverse side, a Caryatid, the medal is the latest in a series issued by Unesco in support of its international action to save outstanding monuments and sites threatened with destruction.

Designed by R. and S. Santucci of Paris, the medal has been struck in France and Switzerland and can be obtained through banks and numismatic dealers in a number of Unesco Member States. Available in gold, silver and bronze, the medal can be obtained with a chain ring and worn as a piece of jewellery. For further information, please apply to the Unesco Philatelic Service, 7 Place de Fontenoy, 75700 Paris.

Flashes...

● ***World gross domestic product in 1975 had a zero rate of growth over the 1974 level, according to the U.N.*** **Statistical Yearbook, 1976.**

● ***The Ca'Foscari University, Venice, bestowed a doctorate*** **honoris causa** ***on Unesco's Director-General, Mr. Amadou-Mahtar M'Bow on 9 July 1977.***

● ***World military research in 1975 cost $25 billion, 6 times the funds devoted to medical research, and employed 40% of total scientific personnel, according to figures cited at a symposium of non-governmental organizations held at Unesco HQ in Paris in June 1977.***

● ***Switzerland has contributed $100,000 in expert services to an irrigation and hydro-power project in northern Thailand, organized by the Mekong Committee, an inter-governmental body affiliated to the Economic and Social Commission for Asia and the Pacific (ESCAP).***

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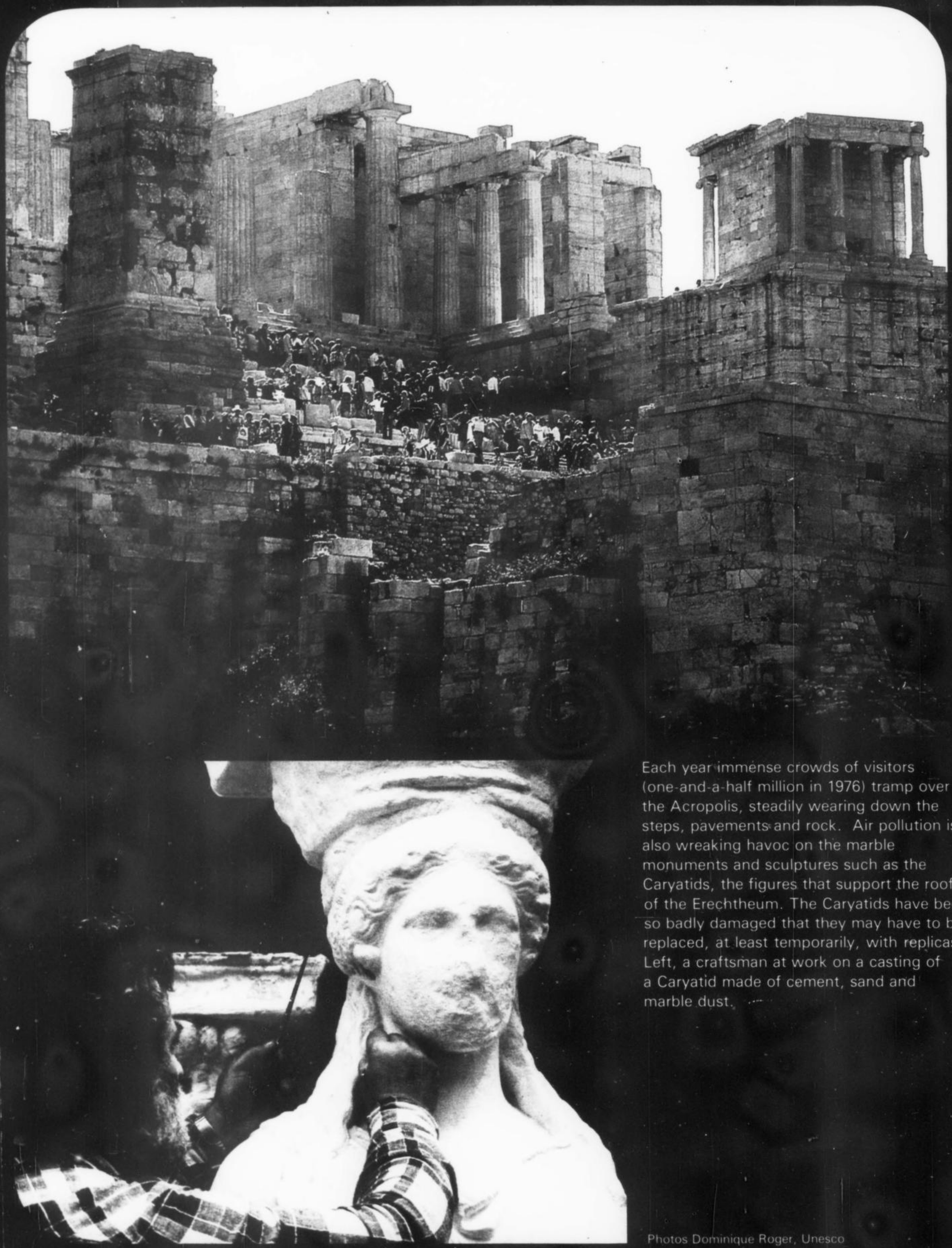
Wear and tear on Athens' Holy Rock



Each year immense crowds of visitors (one-and-a-half million in 1976) tramp over the Acropolis, steadily wearing down the steps, pavements and rock. Air pollution is also wreaking havoc on the marble monuments and sculptures such as the Caryatids, the figures that support the roof of the Erechtheum. The Caryatids have been so badly damaged that they may have to be replaced, at least temporarily, with replicas. Left, a craftsman at work on a casting of a Caryatid made of cement, sand and marble dust.

Photos Dominique Roger, Unesco